A REVISION OF THE ATHALIINI (HYMENOPTERA : TENTHREDINIDAE)

BY

ROBERT B. BENSON

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SYNOPSIS

The Athaliini are defined as a tribe of the Tenthredininae comprising 4 genera (3 of them monotypic) containing in all 64 species with 10 subspecies. Of these, 1 genus, 9 species and 3 subspecies are described as new, and many of the previously described species are reduced to synonymy. Keys are given to the 4 genera and the 8 species groups of *Athalia* as well as to all the species and subspecies.

Discussions on phylogeny, dispersal and distribution in relation to host plant associations are included, together with a host-plant list.

1. INTRODUCTION AND ACKNOWLEDGEMENTS

Apart from its taxonomic interest as a genus from near the base of the Tenthredinid stem showing some primitive features, *Athalia* is also interesting biogeographically and biologically. Its food-plant association is entirely with herbaceous plants;

throughout its range, which is restricted to the Old World, occur species attached to Cruciferae and destructive to cultivated vegetables of this family, such as cabbages, turnips and mustard.

My own studies in the genus began over thirty years ago after reading Dr. Priesner's paper (1928). Since then I have subjected to intensive study any material I could acquire ; and I have seen the *Athalia* in most of the European Museums and have examined most of the types of previous authors.

The following are some of the many people I wish to thank for helping me by collecting and sending material, or lending me material from their private collections or the collections over which they had charge :

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Finally I should like to thank Arthur Smith for his beautiful drawings (Text-figs. 1–22, 44 and 56–58) and Miss J. A. Black for typing the manuscript.

2. THE TAXONOMIC BACKGROUND

Despite its taxonomic and economic interest the genus *Athalia* has never previously been revised as a whole, though assuredly Konow published two separate keys, one to 17 African species (1908 (1)) and one to 20 Palaearctic and Oriental species (1908 (2)), though the two sections were not distinguished taxonomically apart from geography. In these keys the species were distinguished almost entirely on colour-pattern with a few references to pubescence and gross clypeal shape. Only in distinguishing *A. paradoxa* from *A. circularis* (= *lineolata*) is any reference made to the female hypopygium. Enslin (1913) included a more detailed revision of European *Athalia* on the same general lines. And yet in their interpretation of *A. lineolata* they included four or five different species with distinct forms of hypopygium as shown by Priesner (1928) and Benson (1931). And later the whole of the large collection of African *Athalia* in the British Museum (Natural History) was named and recorded in detail by Forsius (1931) ; though in the present work different criteria are used for recognizing and distinguishing species and the list published by Forsius is now superseded.

In the present study the genera *Hennedyia* and *Hennedyella* are being associated with *Athalia* to form a distinct tribe of the Tenthredininae ; and a fourth genus *Hypsathalia* is being erected for the high Himalayan species heretofore known as *Athalia przevalskyi*. The genus *Athalia* itself is being further divided into eight species-groups based mainly on the form of the clypeus.

3. DISTRIBUTION

The general pattern of the distribution of the eight species-groups of *Athalia* and the three monotypic genera is shown in Table I.

From this it can be seen that the two primitive genera *Hennedyia* and *Hennedyella* are known only from the West Mediterranean and Burma respectively and are probably early Tertiary relics. The high Himalayan *Hypsathalia* is likewise no doubt derived from lowland Tertiary stock, possibly the same stock that gave rise to *Athalia nigromaculata* and *A. sikkimensis*, which alone share with it a characteristic colour pattern, with a dorsal row of black spots each side of the abdomen. These two species form a complex related to the *lugens*-complex of the *rosae*-group of *Athalia*.

These two complexes are centred in the mountains of tropical South-east Asia where they are represented by six species, only one of which, *A. lugens*, occurs in Europe ; but most of the width of North Asia now separates the range of the European *A. lugens lugens* from the range of *A. lugens proxima* fringing the Pacific coast of East Asia from Kamtchatka to Borneo and Java. Similarly widely separated west and east subspecies-pairs occur in *A. scutellariae*, *A. rosae*, *A. liberta* and *A. circularis*, and not far removed from this the species-pair *A. cordata* and *A. kashmirensis*. It is not clear when last the now widely separated geographical ranges of these subspecies and species-pairs were continuous populations. It may have been during the Post-Glacial Climatic Optimum (Moreau, 1955) if Central Asia was at that time sufficiently humid for a continuous deciduous forest belt to exist between Europe and East Asia across Southern Siberia. The *cordata-kashmirensis* species-pair have diverged from each other more than the subspecies-pairs have and may therefore date from an earlier separation possibly after the last Interglacial or perhaps very much earlier. But now, Dr. Zhelochovtsev tells me, except for *A. ahngeri*, *Athalia* are absent from the steppes of Central Asia and occur only sparingly in such places as river valleys, swamps and mountains.

No less than three species-groups seem to be centred now in South-east Europe where they presumably survived the Glacial Period in an area well known to be rich in Tertiary plant and animal relics.

TABLE I.—*Distribution of Athaliini*

(The numbers in heavy type indicate maximum concentration)

	Total	Africa	Madagascar	W. Medit.	S.E. Europe and E. Medit.	C. Europe	Temp. E. Asia	Tropical E. Asia	Himalayas
Hennedyia . . .	1	—	—	1	—	—	—	—	—
Hennedyella . . .	1	—	—	—	—	—	—	1	—
Hypsathalia . . .	1	—	—	—	—	—	—	—	1
Athalia									
1. *scutellariae* Group .	3+1	—	—	—	**2**	1	1	—	—
2. *bicolor* Group .	5	—	—	2	**4**	2	1	—	—
3. *glabricollis* Group	7+1	**5**	—	1	2	1	—	—	—
4. *cordata* Group .	10+1	3	—	2	2	2	2	**4**	—
5. *rosae* Group	13+4					5	4	8	
(a) *rosae* complex		—	1	3	**4**	**4**	2	2	—
(b) *lugens* complex		—	—	—	—	1	2	**6**	—
6. *furvipennis* Group	16	**16**	—	—	—	—	—	—	—
7. *himantopus* Group .	1+2	**1**+2	—	—	—	—	—	—	—
8. *vollenhoveni* Group .	6+1	**6**+1	—	—	—	—	—	—	—
Total number of species of *Athalia* (and groups) . + subspecies	61(8) +10	**31**(5) +3	1	8(4)	14(5)	11(5)	10(3) +1	12(2)	0
Number of spp. of other . Athaliini genera	3	—	—	1	—	—	—	1	1
Total spp. of Athaliini . + subspecies	64 +10	**31** +3	1	9	14	11	10 +1	13	1

The solitary species in Madagascar, *A. malagassa*, is closely related to the Eurasian *A. rosae*, likewise a pest on cultivated vegetable crucifers ; but no species of the *rosae*-group are now found in Central or Southern Africa. The presence of Palaearctic plants and animals in Madagascar has never been satisfactorily explained (see Moreau, 1952) as there is no evidence of there having been any bridge of non-tropical climate across the equator in Tertiary times or since.

Thirty-one species are known from Africa in five different species-groups, three of which are restricted to Africa and another, the *glabricollis*-group, is centred there. This might point to Africa as being the country of origin of the whole group but without any fossil evidence this cannot be maintained with any certainty.

4. DISPERSAL AND SWARMING

The only records of sawflies seen crossing the sea and surviving the passage refer to *Athalia rosae* (see Benson, 1950). A vast cloud of this species was observed arriving on the east coast of England in the summer of 1782 (Newport, 1838), and afterwards many were found on the shore washed up by the sea, heaped up in places to a depth of 2 in. The species was at that time a serious pest of turnips in England in sequences of hot summers, but less so in sequences of cold and wet ones. Its importance as a pest diminished in the second half of the nineteenth century ; and at the beginning of the twentieth century it was virtually extinct in England, and had disappeared also in Scandinavia and other parts of North Europe.

During the warm summers just before 1940 the species began to increase and spread north again from its centres in Southern Europe. In 1945 it reached the Channel Islands and crossed to England, where it spread rapidly over most of the Southern Counties. It also reached Southern Sweden, where I found it near Lund in August, 1948. And though it persisted sparingly in the freshly invaded areas for several years the recent sequence of mainly wet dull summers and cold dry springs has not favoured its survival.

During the same period that *A. rosae* spread again over Southern England, *A. bicolor* also reappeared and was found plentifully. In the preceding decades this had been an exceptionally scarce species in Britain and it is again now. But there is no evidence of any immigrant swarm of this species at this time, as in *A. rosae*. Then in August, 1941 I myself observed a very vast swarm of *A. cordata* moving eastwards across country in North Devon.

The period from about 1920 to 1950 was notable, in Britain and North-western Europe generally, for the increase in numbers and the spread not only of sawflies but of many other insects that had been in eclipse for two or three decades. These include the well-documented upsurge of the Comma Butterfly (*Polygonia c-album* (L.)) and the White Admiral (*Limenitis camilla* (L.)). One of the most remarkable things about these increases is that no one has been able to explain them satisfactorily. If such great changes in abundance and distribution can take place in modern times from unobserved causes, how can we estimate what might have happened during some of the major climatic changes known to have taken place in the Post Glacial Period ? How, for example, did the Climatic Optimum of Atlantic Times affect such species ?

5. HOST-PLANT RELATIONSHIPS

The larval morphology of *Athalia* has been described in detail recently by Lorenz & Kraus (1957). Those species that have been studied are potentially many-brooded and continue producing broods throughout the year so long as the temperature and humidity are equable.

It is interesting that five of the eight different groups of *Athalia* are entirely, or, so far as is known, mainly associated with Cruciferae, and that four of these occur in Africa ; and that of these four that are African three include mature cabbage (*Brassica oleracea* L.) among the plants attacked, several species such as *A. himantopus, A. sjoestedti* and *A. vollenhoveni* being major pests of cabbage. Yet the original home of cabbage is thought to be Atlantic and Mediterranean Europe, the only regions where cabbage still grows wild today (Clapham, Tutin & Warburg, 1952 : 152, etc.).

On the other hand the Eurasian species on Cruciferae will at most only eat cabbages as seedlings, though species such as *A. rosae, A. lugens proxima* and *A. japonica* are major pests of turnip plants (*Brassica rapa* L.).

It would be interesting to discover what are the native host-plants of those African species that are now pests on cabbage and other crucifers.

The recorded host-plants in the genus are listed below. All are herbaceous plants and mostly belong to open or partly open communities, of warm, temperate, often dry regions. Both the Cruciferae and Labiatae, the predominating families, are associated mainly with a similar type of climate. But it is necessary to emphasize that, apart from European species, the only host-plants recorded for the genus for certain are cultivated plants and mostly not themselves native to the countries where they are attacked by native *Athalia.* The host-plants of species of sawflies not attacking crops are still mainly unknown outside Europe.

6. HOST-PLANT LIST

(The species-group numbers precede the names of the *Athalia* spp.)

COMPOSITAE

Arctium lappa L. : (4) *circularis.*

CRASSULACEAE

Sedum album L. : (5) *cornubiae.*

CRUCIFERAE

Alliaria officinalis Bieb. and ***petiolata*** (Bieb.) Cavara & Grande : (5) *liberta.*
Arabidopsis thaliana (L.) Heynh. : (5) *liberta.*
Armoracia rusticana Gaertn., Mey. & Scherb. : (5) *rosae.*
Barbarea spp. : (5) *japonica, rosae.*
Brassica napus L., ***nigra*** (L.) Koch, ***juncea*** L. and ***rapa*** L. (= *campestris* L.) : (5) *japonica, malagassa, lugens infumata, lugens proxima* and *rosae* ; (6) *furvipennis* ; and (8) *sjoestedti.*

Brassica oleracea L. : (6) *furvipennis* ; (7) *himantopus* ; (8) *sjoestedti* and *vollenhoveni*.
Cardamine hirsuta L. : (5) *liberta*.
Diplotaxis tenuifolia (L.) D.C. : (3) *glabricollis*.
Erysimum cheiranthoides L. : (3) *glabricollis*.
Lepidium sativum L. : (5) *lugens proxima* ; (8) ? *schweinfurthi*.
Nasturtium spp. : (7) *himantopus*.
Raphanus raphanistrum L. : (3) *glabricollis* ; (5) *japonica, lugens proxima, malagassa* and *rosae*.
Rorippa amphibia (L.) Bess. : (5) *rosae*.
Sinapis alba L., and **arvensis** L. : (3) *glabricollis* ; (5) *japonica, liberta* and *rosae*.
Sisymbrium officinale (L.) Scop., etc. : (3) *glabricollis* ; (5) *liberta* and *rosae*.

LABIATAE

Ajuga reptans L. : (4) *cordata*.
Coleus barbatus Bentham : (6) ?*mellis*.
Glechoma hederacea L. : (4) *circularis*.
Salvia : (6) ?*mellis*.
Scutellaria gallericulata L. and **minor** L. : (1) *scutellariae*.

PLANTAGINACEAE

Plantago spp. : (4) *cordata*.

RANUNCULACEAE

Ranunculus spp. : (2) ?*bicolor*.

SCROPHULARIACEAE

Antirrhinum orontium L. : (4) *cordata*.
Veronica spp. : (4) *circularis*.

7. THE 9-SEGMENTED ANTENNA IN TENTHREDINIDAE

One of the characters distinguishing the Tenthredinidae from the other families of the Tenthredinoidea is that the antenna is normally 9-segmented in all its three main subfamilies : Selandriinae, Tenthredininae and Nematinae.

This character must therefore have become established, at least potentially, and correlated with other Tenthredinid characters before the original stock diverged into these three main subfamilies, as it is unlikely to have arisen entirely independently in each line of them. Any departures from this number of antennal segments would seem to be due either to direct descent from pre-9-segmented stock or to the break-down of the close correlation between the 9-segmented antenna and the other Tenthredinid characters. The following Tenthredinidae have less or more than 9 segments to the antenna, but appear to be closely related to forms having normal 9-segmented antennae and would seem to have been descended from such stock : Heptamelini (7–8) and Dulophanini (10+) of Selandrinae ; Cladiuchini

(*Cladiucha c.* 23), Fenusini (9–12), and certain *Tenthredo* (8–7) of Tenthredinini of Tenthredininae; and *Decanematus* (10) of Nematini of Nematinae.

On the other hand the Heterarthrini (10–15) and Athaliini (10–21) do not seem to be related to any 9-segmented stock and are probably descended directly from stock in which the number of antennal segments had not become fixed and correlated with other characters.

The antennae of the Athaliini are further discussed in section 8 (c) below.

8. TAXONOMIC CHARACTERS

Most of the characters used below in the taxonomic part are adequately explained there but a few supplementary generalizations are included here. All the parts of the insects figured are orientated, when in dorsal or ventral view, on the assumption that the insect had its head at the top of the page and apex of the abdomen at the bottom, or when in lateral view it is always the left side as though the head were to the left of the page.

(a) *Colour-pattern*

The significance of the Athaliine colour-pattern—black head and thorax, yellow abdomen and yellow legs with black rings at the joints—is not known but it is a common sawfly colour-pattern occurring in most of the tribes and subfamilies of most of the families as well of course in many other orders of insects.

There are several parallel variations of this general colour-pattern in *Athalia*. There are, for example, the dark-winged forms that occur in warm humid regions such as the mountains of tropical Africa, the Eastern Himalayas and Japan. In the Himalayas this infuscation has become characteristic of two complexes of the *rosae*-group centred there; the *lugens*- and the *nigromaculata*-complexes. Of these the species *A. lugens* has spread to Western Europe.

Between the West/East Eurasian species-pairs *A. cordata* and *A. kashmirensis* the main differences are the heavily infuscated wings and legs of the latter. In the African *vollenhoveni*-group, however, the tibiae and tarsomeres can vary from being yellow with black apical rings to being entirely suffused with black in the self same species, e.g. *A. segregis*; but it is not known whether these differences are related to dry and wet seasons or any other simple climatic effects.

All the five species-groups occurring in Africa, whether restricted to Africa or not, consist predominantly in species with the pronotum and tegulae entirely black, a pattern occurring in only a few species of two groups in Eurasia: the *bicolor*-group and the *lugens*-complex of the *rosae*-group.

Several Eurasian species or species-complexes of different groups have a black mesonotum becoming progressively more marked with reddish-yellow towards the East and South-east of Asia, e.g.: *A. scutellariae scutellariae* and *A. scutellariae flammula*; *A. lugens lugens* and *A. lugens proxima*; *A. cordata* and *A. kashmirensis*. In Africa, species with a yellow-marked mesonotum occur in the drier parts such as Somaliland, Sudan and South-West Africa, as well as in the hot coastal belt of the Indian Ocean.

The differences in pattern between the front, middle and hind pairs of legs are sometimes valuable taxonomic characters. I have, for example, examined thousands of specimens of *A. cordata* and *A. circularis* and have confirmed that the former invariably have dark-ringed front tibiae and that in the latter the tibiae are at the very most slightly brownish-tipped. In contrast to this the colour-pattern of the underthorax can often show a wide range; in *A. circularis* this can be entirely yellow, yellow with a dark sterno-pleural line more or less developed, to entirely black.

(b) *Clypeus*

The most obvious and therefore practicable characters for distinguishing genera and species of *Athalia* are in the head, and in the head the clypeus shows the greatest range of useful characters. These are illustrated in Text-figs. 8–20. The curious asymmetrical clypeus in the African *furvipennis*-group (Text-fig. 17) is less evident in those species in which the clypeus is elongate (Text-figs. 15–16).

(c) *Antenna*

As mentioned in Section 7, the Athaliini appear to have been descended from ancestors with multisegmented antenna and not from the stock from which the three main subfamilies of Tenthredinidae arose, with 9-segmented antennae. The Athaliini also show a progressive reduction in antennal segments from the 18–21 of *Hennedyia* and *Hennedyella* to the 10–13 of *Hypsathalia* and *Athalia*. In the ♂ *Hennedyia* and ♀ *Hennedyella* (♂ unknown) the antenna tapers from base to apex and the apical segments are longer than broad; contraction has not yet begun. In ♀ *Hennedyia* and in *Athalia* there is a progressive contraction of the antenna with a shortening and fusion of the apical segments to form a small club (cf. Text-figs. 3–7).

The shortening of the antenna has progressed furthest in some of the Mediterranean and steppe species of the *glabricollis*- and *bicolor*-groups and is correlated with a shortening of the tibial spurs.

In the *bicolor*-group the antennae are placed much further apart than in the other groups and closer to the eyes (cf. Text-fig. 10). But because of the sexual differences in the size of the eyes the distance between the antennal sockets is better measured in relation to the transverse diameter of a socket. The distance between the sockets has also been used as a standard with which to compare the length of the malar space (see Section 8 (e), below) in closely-related species.

(d) *Labium*

Long-tongued species occur in three different groups of *Athalia*. The length of the tongue is a good specific character, but does not necessarily show phylogenetic relationships between species. It presumably indicates a habit of feeding from flowers, perhaps Labiatae, with deep-set nectaries. For practical purposes the measure used in the keys has been the length of the prelabium (i.e. the labium without its reflexed basal portion) compared to the greatest measure of a compound eye; this ratio will show slight sexual differences because males have comparatively larger eyes than females (Text-figs. 21–22).

(e) *Malar Space*

The malar space, or shortest distance between the base of the mandible and the edge of the nearest compound eye, is a useful character for distinguishing especially the females of certain closely-related species of *Athalia* (Text-figs. 8–20). The character is usually measured in relation to some other part of the insect not correlated with it in size. The distance between the antennal sockets has been used frequently for comparison with the longer malar spaces, but in the males with their almost linear malar spaces the length is measured in terms of diameters of compound eye facets (Text-figs. 14 and 16).

(f) *Pubescence*

Pubescence in *Athalia* shows differences in the quality of the pile or in its distribution. In the *bicolor*-group, for example, the head above and the thorax are uniformly covered with a fine, dense, close pile which distinguishes the group from all others. Several species are characterized by the presence of glabrous areas such as on the clypeus in *A. cordata* and *A. kashmirensis*, and on the mesonotal lobes in several of the *glabricollis*-group. In *A. himantopus* a glabrous patch each side of the mesosternum is present only in the female in the Ethiopian and tropical African races, but is absent in all the males and in the female of the South African race.

(g) *Male Genitalia*

Studies in the male genitalia show slight but evident differences between species in the form of the penis-valves. In those so far studied the differences are not of much value because they are vastly inferior to gross external differences between the species concerned.

(h) *Female Hypopygium*

The range in the form of the female hypopygia is shown in Text-figs. 24–43. These figures were mainly drawn from dissections and it should be pointed out that in dried undissected specimens the form of the hypopygium is often much distorted and partly covered by the surrounding sclerites.

(i) *Female Saw*

A few closely-related species can be readily told from each other by gross differences in the shape of the lower marginal teeth. The range is depicted in Text-figs. 44–55. The prominent, sharply pointed type of tooth which I have referred to as " dog teeth " occur in ten species of three different species-groups (Text-figs. 52–55) ; they do not necessarily indicate close relationship and any special significance they may have in oviposition has not been investigated.

(j) *Tibial Spurs*

Very short tibial spurs are characteristic of the *bicolor*- and *glabricollis*-groups (cf. Text-figs. 56 and 57), and are associated with short antennae. Exceptionally long spurs occur in *A. armata* of the *furvipennis*-group (Text-fig. 58). The inner and outer spur of the front, middle and hind legs of male and female can each be of a different length : the inner spur of the hind tibia is therefore taken as the standard spur for comparison between species.

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10. CHECK LIST OF SPECIES OF ATHALIINI

- *Hennedyia annulitarsis* Cameron, Gibraltar.
- *Hennedyella athaloides* Forsius, Burma.
- *Hypsathalia przevalskyi* (Jakovlev) Himalayas and Tiber.
- *Athalia* (Group of *scutellariae*) :
  - *A. scutellariae scutellariae* Cameron, Europe (= *galericulatae* Kontuniemi).
  - *A. scutellariae flammula* Zhelochovtsev, East Asia.
  - *A. cuspidata* Benson, Palestine.
  - *A. dimidiata* Konow, Asia Minor.
- *Athalia* (Group of *bicolor*) :
  - *A. bicolor* Lepeletier, Western Palaearctic (= *annulata* Fabricius, *richardi* Lep.).
  - *A. rufoscutellata* Mocsáry, Western Palaearctic (= *maritima* Kirby).
  - *A. maculata* Mocsáry, Western Palaearctic.
  - *A. paveli* Mocsáry, Western Palaearctic.

- *A. decorata* Konow, Eastern Asia.

Athalia (Group of *glabricollis*) :

- *A. abyssinica* Forsius, East Africa.
- *A. incomta* Konow Central and South Africa (= *bicolor* Sauss, *laevigata* Mocsáry).
- *A. nigriceps* Konow, Sudan, etc.
- *A. brevicornis* Benson, South Africa.
- *A. glabricollis glabricollis* Thomson, West and Central Europe.
- *A. glabricollis meridiana* Benson, Eastern Mediterranean.
- *A. turneri* Forsius, South-West Africa.
- *A. zanzibarica* Forsius, East African Coast.
- *A. ahngeri* Kujev, South-western Asia.

Athalia (Group of *cordata*) :

- *A. circularis circularis* Fabricius, Western Palaearctic (= *lineolata* Lepeletier ; *bolivari* Dusmet, *cordatoides* Kontuniemi, *longifoliae* Kontuniemi).
- *A. circularis melanoptera* Benson, Eastern Palaearctic.
- *A. xantha Benson*, Africa.
- *A. scioensis* Gribodo, Africa (= *fumosa* Gribodo).
- *A. concors* Konow, Africa (= *similis* Mocsáry, *erythraspides* Enslin).
- *A. hummeli* Benson, China.
- *A. picta* Benson, China.
- *A. indiana* Benson, India.
- *A. cordata* Lepeletier, Western Palaearctic (= *blanchardi* Brullé).
- *A. kashmirensis* (Benson), East Asia (= *veronicae* Takeuchi).

Athalia (Group of *rosae*) :

- *A. antennata* Cameron, India.
- *A. rosae rosae* (L.) Western Palaearctic (= *colibri* Christ, *spinarum* Fabricius, & *centifoliae* Panzer).
- *A. rosae ruficornis* (Jakovlev), East Asia (= *leucostoma* Cameron, *japanensis* Rohwer).
- *A. malagassa* Saussure, Madagascar.
- *A. paradoxa* Konow, Central Europe.
- *A. cornubiae* Benson, Western Palaearctic.
- *A. liberta liberta* (Klug), Western Palaearctic (= *ancilla* Lepeletier).
- *A. liberti yanoi* Takeuchi, Eastern Palaearctic.
- *A. sikkimensis* (Benson), North India.
- *A. nigromaculata* Cameron, North India.
- *A. japonica* (Klug), East Asia (= *nigrinotum* Matsumura & *novittata* Kokujev).
- *A. lugens lugens* (Klug), Western Palaearctic.
- *A. lugens infumata* (Marlatt) Japan.
- *A. lugens proxima* (Klug), East Asia (= *tibialis* Cameron, *orientalis* Cam., *funebris* Forsius, *kuroiwae* Matsumara & Uchida, *camtschatica* Forsius and *tristis* Forsius).
- *A. birmanica* Benson, Burma.

A. kansuensis (Benson), China.
A. scapulata Konow, Oriental.
Athalia (Group of *furvipennis*) :
A. schoutedeni Forsius, Central Africa.
A. dulcis Benson, Central Africa.
A. dissona Konow, Central Africa.
A. limpopo Benson, South-east Africa.
A. pullicoma Konow, Africa.
A. clavata Konow, Africa.
A. mellis Benson, Africa.
A. pluto Benson.
A. ustipennis Mocsáry, Africa (= *mashonensis* Enslin).
A. cerberus Benson, Central Africa.
A. furvipennis Mocsáry, Africa (= *flacca* Konow).
A. umbrosa Benson, East Africa.
A. armata Benson, Central Africa.
A. nigripes Enslin, Central Africa.
A. asbolos Benson, Central Africa.
A. pulla Benson, Central Africa.
Athalia (Group of *himantopus*) :
A. himantopus truncata (Enslin), Central and East Africa.
A. himantopus obsoleta Benson, Ethiopia.
A. himantopus himantopus Konow, South Africa.
Athalia (Group of *vollenhoveni*) :
A. guillarmodi Benson, South Africa.
A. sjoestedti Konow, Central and East Africa (= *infumata* Mocsáry & *marginipennis* Enderlein).
A. vollenhoveni Gribodo, East Africa.
A. segregis Konow, Central and East Africa (= *melanopoda* Enslin).
A. fuscata Benson, East Africa.
A. schweinfurthi schweinfurthi Konow, Arabia and Ethiopia.
A. schweinfurthi atripennis Benson, East Africa.

II. ATHALIINI (TENTHREDININAE)

Antenna with 10 or more segments ; flagellum subclavate (except in *Hennedyella* and the ♂ of *Hennedyia*) with the subapical segments broader than long. Head without post-genal carina. Eyes ± converging in front (except in *Hypsathalia*) ; more strongly in ♂ than ♀ (except ? in *Hennedyia*). Mesepisternum (Text-fig. 1) with upper half convex and rounded ; mesopleural suture Z-shaped. Wings of generalized Tenthredinid type (Text-fig. 2) : C and $Sc + R$ in fore wing are so swollen as almost to obliterate cell C ; M arises from $Rs + M$ after the latter has left $Sc + R$ (except in *Hennedyia*) ; anal cell complete with oblique cross-vein ; hind wing with 2 enclosed medial cells. Inner front tibial spur simple. Length 5–8·5 mm.

Colour pattern characteristically with yellow body, and head and mesonotum mainly black, legs normally yellow with tibia and tarsi black-ringed apically, though the black may disappear from the front and middle legs, or spread so as to suffuse all the legs.

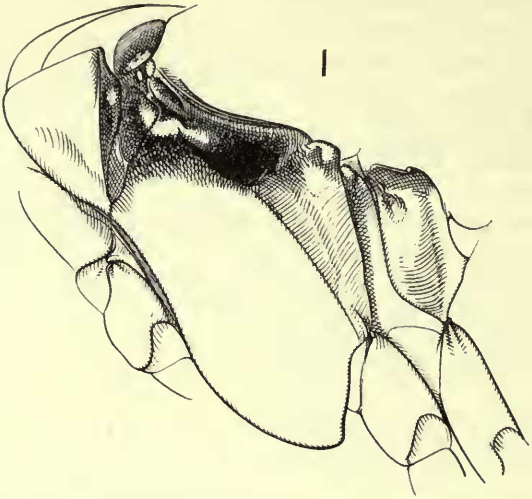


FIG. 1. Left lateral view of thorax of *Athalia sjoestedti*.

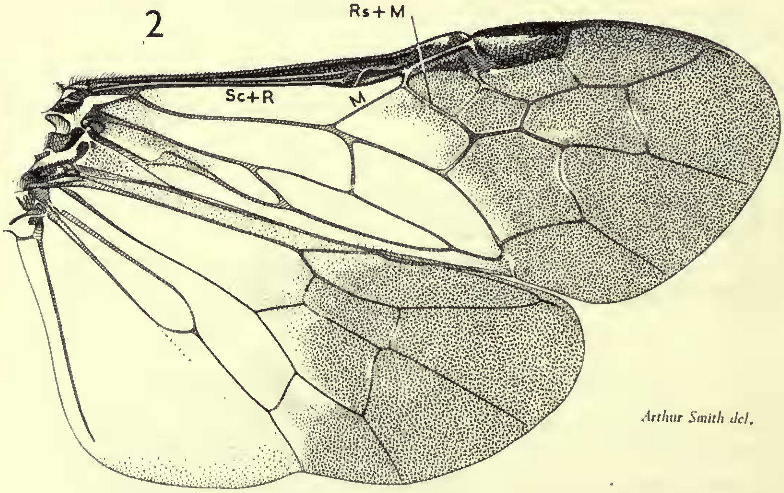


FIG. 2. Right pair of wings of *Athalia sjoestedti*.

Wings are often ± infuscate apically (Text-fig. 2) or all over ; and the stigma and most of the venation are piceous.

This tribe is divided into four genera (three monotypic and the other with 61 species and 10 subspecies). They are distributed over most of Africa, Europe and Asia. The larvae, so far as is known, are attached to herbaceous dicotyledonous flowering plants and include several that are destructive to cultivated Cruciferae throughout their range.

The correlation of two primitive characters [(1) the antenna being more than 9-segmented and (2) the origin of M in the fore wing usually from $Rs + M$ *after* the latter has left $Sc + R$] with a unique form of mesopleura justifies the treatment of this group of genera as forming at least a distinct tribe of the Tenthredininae, and possibly as a distinct subfamily.

An asterisk * before a species-name below indicates that the author has examined the type of it during these studies.

12. KEY TO GENERA

1 Antenna 18- to 21-segmented, with the flagellum either subclavate (Text-fig. 6) or tapering from base (Text-fig. 7), and with the two basal segments either transverse or longer than broad. Tarsal claws with small inner tooth. Clypeus subtruncate, scarcely longer medially than distance between antennal sockets 2

– Antennae 10- to 13-segmented, with the flagellum subclavate, and with the two basal segments longer than broad (Text-figs. 3–5). Tarsal claws simple or with inner tooth. Clypeus emarginate, subtruncate or produced in front, often longer medially than distance between antennal sockets 3

2 (1) Antenna 20- or 21-segmented with two basal segments transverse; flagellum tapering apically in ♂ (Text-fig. 7), but subclavate in ♀, with segments beyond 12th transverse (Text-fig. 6). M of fore wing joins $Rs + M$ after the latter has left $Sc + R$.

One species, *H. annulitarsis* Cameron, from Gibraltar ***HENNEDYIA*** Cameron

– Antenna 18-segmented with two basal segments longer than broad and flagellum in ♀ tapering from base. M of fore wing joins $Sc + R$ slightly before the origin of $Rs + M$.

One species, *H. athaloides* Forsius, from Burma . ***HENNEDYELLA*** Forsius

3 (1) Eyes converge noticeably in front where they are at most scarcely further apart than the length of an eye in ♀ (Text-figs. 9–13, 15 and 16, 18–20) and in ♂ (Text-figs. 14 and 17) usually much closer than the length of an eye; and their lower margins are far below the antennal sockets. Malar space at its most not longer than distance between antennal sockets.

61 spp. + 10 subspp. Africa, Europe and Asia . . . ***ATHALIA*** Leach

– Eyes subparallel and small so that they are only about two-thirds as long as their distance apart in front (Text-fig. 8); and their lower margins are almost in a straight line with the lower margin of the antennal sockets. Malar space longer than distance between antennal sockets. Mandibles stout so that their medial breadth is about the same as the basal breadth of the labrum.

One species, *Athalia przevalskyi* Jakovlev, from the mountains of Central Asia . . . . ***HYPSATHALIA*** gen. nov.

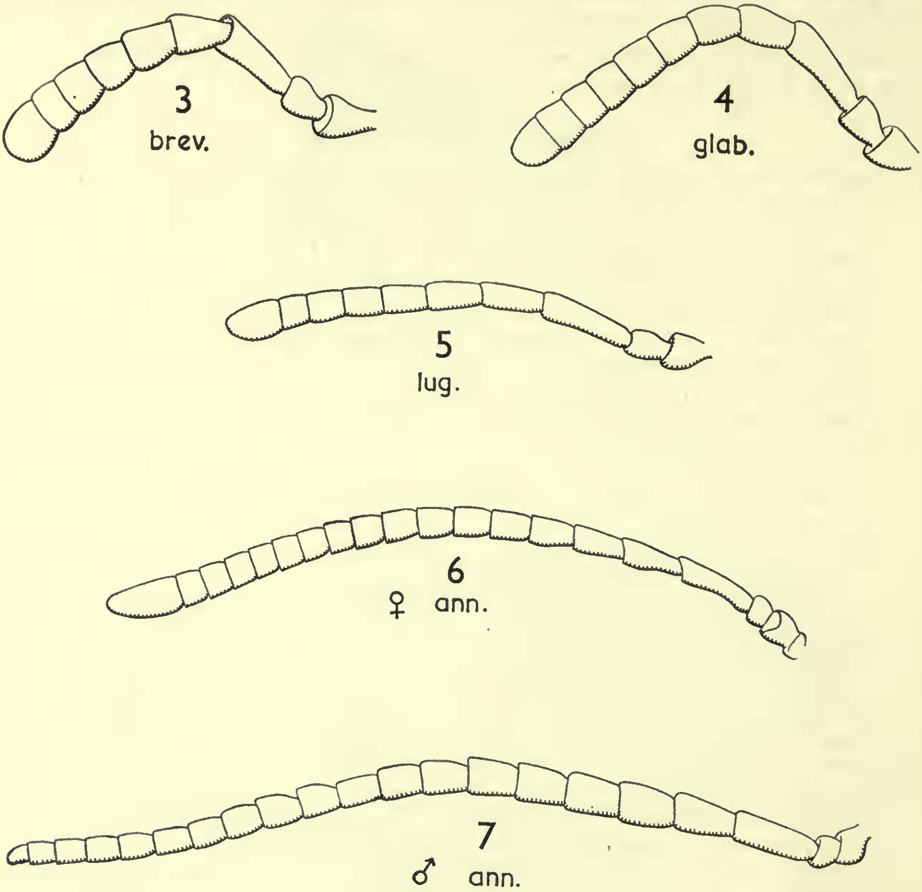
13. Genus ***HENNEDYIA*** Cameron

Cameron, P., 1891, *Mem. & Proc. Manchester Lit. Phil. Soc.* **4** (4) : 9. Monotypic.

H. annulitarsis Cameron

**Hennedyia annulitarsis* Cameron, P., 1891, *loc. cit.*

Head and thorax black except for mouthparts, clypeus, pronotum, and tegulae which are brown, and the legs which are brown, apart from the black apices of the hind tibiae and apices of all the tarsomeres. Wings slightly infuscate; *cu–a* of fore wing received on cell 1*M* much closer to vein *M* than to 1*m–cu*. Head with hind ocelli further apart than from back of head; POL : OOL as 1·0 : 0·75. Thorax uniformly pubescent. Sawsheath as long as the two basal tarsomeres and half the 3rd. ♀ hypopygium entire behind. Saw as in Text-fig. 50. Length 5 mm.



Arthur Smith del.

FIGS. 3–7. Left side of antenna in : 3, *Athalia brevicornis* ♀; 4, *A. glabricollis* ♀; 5, *A. lugens* ♀; 6, *Hennedyia annulitarsis* ♀; 7, *H. annulitarsis* ♂.

In addition to the unique male type of this species collected near Gibraltar[1] by J. J. Walker and now in the British Museum, I have found in the Bavarian State Collections, Munich, one female which may belong to the same species. Unfortunately it has no locality label unless the four-pointed pink star on its pin has some such significance unknown to Dr. Kühlhorn. Apart from sexual differences the male and female differ as follows :

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[1] According to his diaries now belonging to the Royal Entomological Society, London, Commander J. J. Walker collected numerous insects, mainly Coleoptera but also Hymenoptera, near Gibraltar when he was stationed there in H.M.S. *Grappler* from October, 1886 to April, 1889.

♂ Antenna 21-segmented, tapering from base to apex with no flagellar segment transverse (Text-fig. 6). Malar space almost one-third (0·3 : 1·0) distance between antennal sockets.

♀ Antenna 20-segmented with flagellum subclavate, the segments beyond the 12th being transverse (Text-fig. 7). Malar space only about as long as the diameter of one eye facet.

This kind of antennal difference between the sexes is not unusual in Hymenoptera, but, apart from the *picta* group of *Rhogogaster*, I am unaware of any other sawfly in which the male malar space exceeds that of the female. It seems not unlikely therefore that this male and this female may belong to different species.

14. Genus ***HENNEDYELLA*** Forsius

Forsius, R., 1935, *Notul. ent. Helsingf.* **15** : 57–59. Monotypic.

H. athaloides Forsius

**Hennedyella athaloides* Forsius, R., 1935, *loc. cit.*

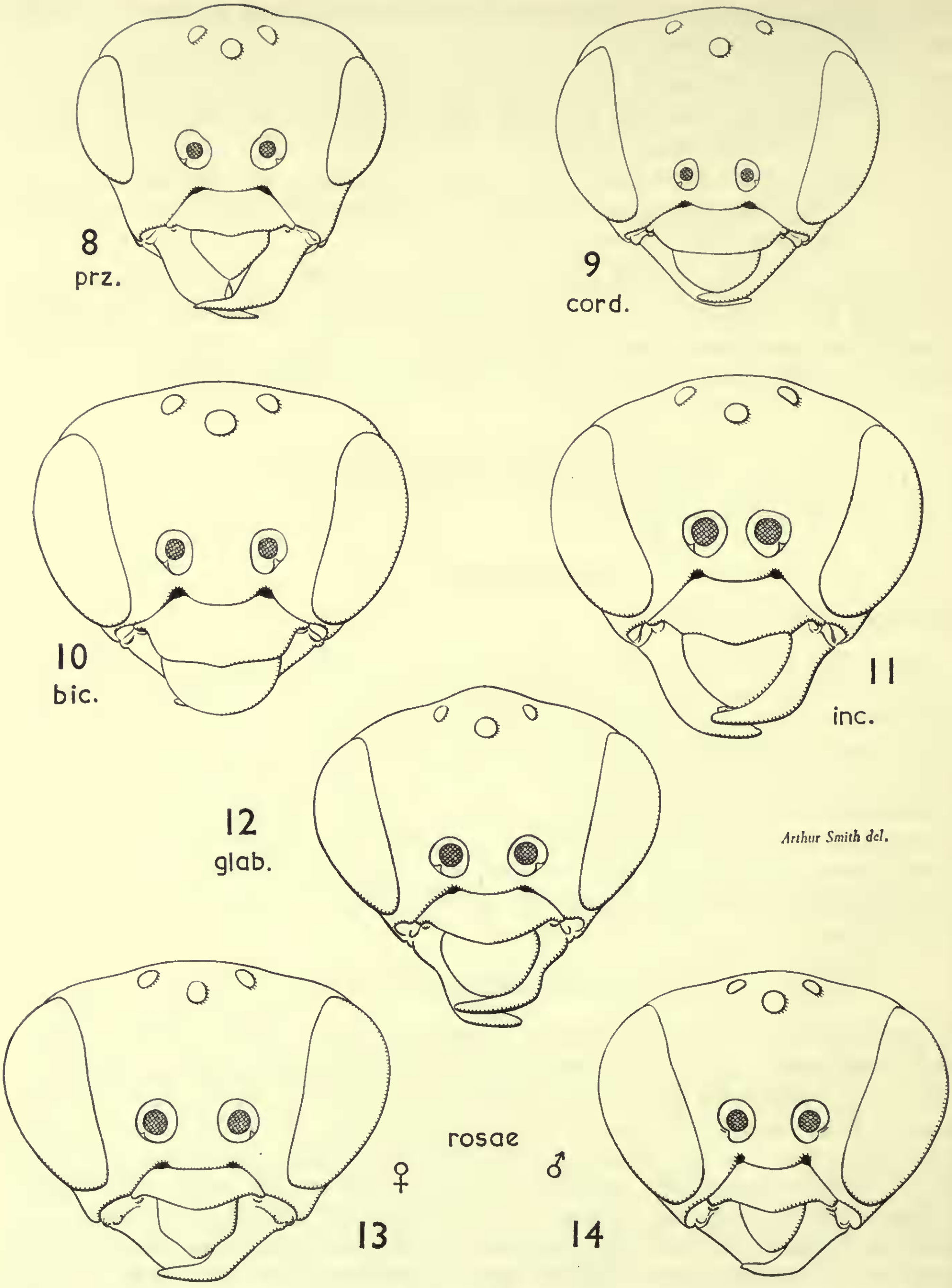
Yellow with the following parts black : antenna, head above clypeus, mesonotum except on the sloping sides and in the sutures which are ± yellow, raised part of metanotum, convex upper part of mesepimeron, tibiae and tarsi of all legs. Wings subhyaline ; front half of stigma black, rest of venation piceous to brown. Vein *cu–a* of fore wing received in middle of cell 1*M* ; hind ocelli closer together than from back of head ; POL : OOL as 1·0 : 1·5. Thorax uniformly pubescent. Hypopygium entire behind. Sawsheath only as long as hind metatarsus. Length 6·5 mm.

Only known from the unique type specimen in Gribodo's collection in the Museo Civico di Genova labelled " Pulu Laut, Borneo ", but, according to Forsius, really from Burma.

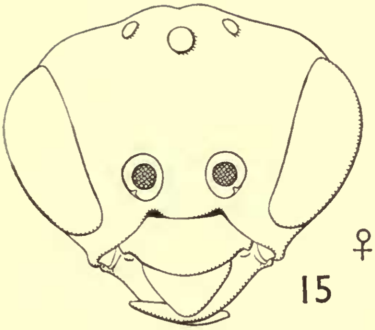
15. Genus ***HYPSATHALIA*** **nov.**

Very broad species. Antennae 10–11 segmented, only about as long as width of head behind eyes, segments beyond 6th transverse. Eyes subparallel in front and very small so that they are only about two-thirds as long as their distance apart in front. Lower margin of eyes and antennal sockets almost in a straight line. Malar space longer than distance between antennal sockets. Mandibles stout so that their medial breadth is about the same as the basal breadth of the labrum (Text-fig. 8). Clypeus slightly produced medially. Fore wing with *M* and 1*m–cu* converging towards stigma ; *cu–a* received on cell 1*M* at about one-third from its base. Tibial spurs long and unmodified ; the inner spur on the hind tibia longer than the apical breadth of the tibia. Length 5–6 mm. Mountains of C. Asia.

Type species *Athalia przevalskyi* Jakovlev.



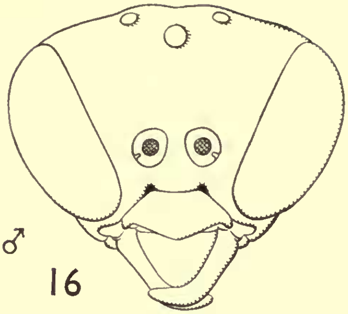
FIGS. 8–20. Face without antennae in: 8, *Hypsathalia przewalskyi* ♀; 9, *Athalia cordata* ♀; 10, *A. bicolor* ♀; 11, *A. incomta* ♀; 12, *A. glabricollis* ♀; 13, *A. rosea* ♀; 14, *A. rosae* ♂; 15, *A. mellis* ♀; 16, *A. mellis* ♀; 17, *A. furvipennis* ♂; 18, *A. himantopus* ♀; 19, *A. vollenhoveni* ♀; 20, *A. schweinfurthi* ♀.

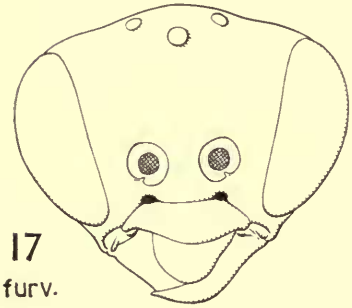


♀ 15

mell.

♂ 16





17
furv.

19
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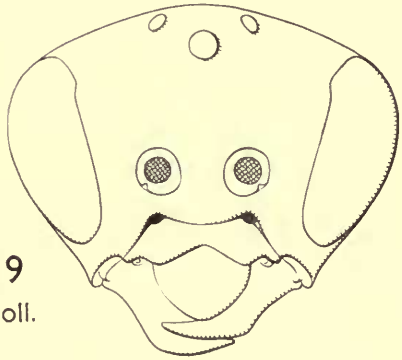

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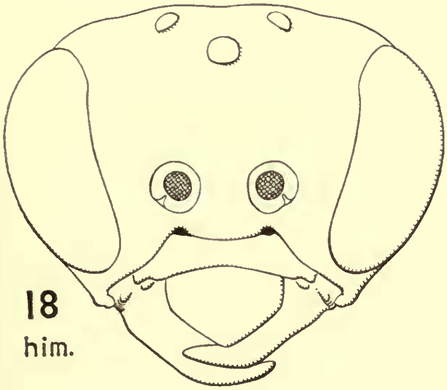

18
him.

20
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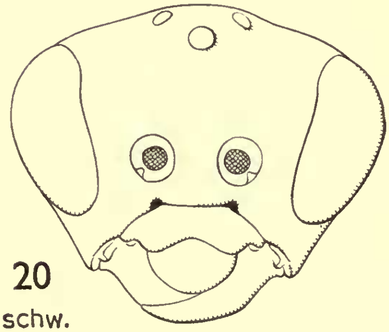


H. przevalskyi (Jakovlev)

Athalia przevalskyi Jakovlev, A., 1887, *Horae Soc. ent. ross.* **21** : 16.

Head black above and yellow below antennae. Pronotum and mesonotum yellow with a black fleck in the middle of the front lobes and on the side of each lateral lobe. Metanotum and underthorax black except for the centre of the mesosternum. Wings subinfuscate ; stigma and venation black. Legs yellow with black coxae and apices of all tibiae and tarsomeres. Abdomen yellow except for the following which are black : 1st, 2nd and ±3rd tergite entirely and a fleck on each lateral edge of the 4th–7th tergites and the sawsheath. ♀ hypopygium (Text-fig. 31). Saw with shallow teeth (cf. Text-fig. 45).

Mountain tundra of Central Asia, 14,000–16,000 ft. : Amne-Machen Shan (Burkham-Budda) in Tsinghai, W. China ; and Himalayas in Tibet, India and Kashmir.

16. Genus ***ATHALIA*** Leach

Athalia Leach, W., 1817, *Zool. Misc.* **3** : 128. Type species : (*Tenthredo spinarum* Fabricius) = *Tenthredo rosae* L.

Dentathalia Benson, R. B., 1931, *Ent. mon. Mag.* **67** : 111. Type species : *Athalia scutellariae* Cameron.

1 Tarsal claws simple 2

– Tarsal claws with inner tooth in addition to end tooth. Clypeus with sinuate front margin.
Three spp. Eurasia (Labiatae) . . . . i. Group of ***scutellariae***

2 (1) Tibial spurs very short (inner hind spur at most less than three-quarters apical width of tibia) (Text-fig. 57). Antenna with 7th or even 6th segment broader than long (Text-figs. 3 and 4), and often with distance between antennal sockets in ♀ greater than diameter of a socket (Text-fig. 10) 3

– Tibial spurs longer (inner hind spur at least as long as apical width of tibia) (Text-figs. 56 and 58). Antenna with only 8th or 9th and following segments broader than long (Text-fig. 5). Distance between antennal sockets usually less than diameter of socket (Text-figs. 13–20) 4

3 (2) Antennae set far apart so that the distance between the sockets is greater than the diameter of a socket (Text-fig. 10). Front margin of clypeus each side with an angle that separates off a lateral margin more than half as long as diameter of antennal socket.
Five Eurasian spp. . . . . ii. Group of ***bicolor***

– Antennae closer together so that the distance between the sockets is less than the diameter of a socket (Text-figs. 11 and 12). Clypeus not angled each side or the angle is so close to the anterior mandibular articulation that the lateral portion of the clypeus is not more than half diameter of an antennal socket.
Two W. Palaearctic and 5 African species (Cruciferae) iii. Group of ***glabricollis***

4 (2) Clypeus longer medially than distance between antennal sockets, and angled, rounded, or subtruncate in front (Text-figs. 13–17) 5

– Clypeus shorter medially than distance between antennal sockets and excised, emarginate, or truncate in front (Text-figs. 18–20) 7

5 (4) Clypeal front margin not angled each side or the angle is so close to the mandibular articulation that the lateral part of the front margin is shorter than half the diameter of an antennal socket (Text-figs. 13–17) 6

– Front margin of clypeus each side with an angle that separates off (between the angle and the mandibular articulation) a lateral margin more than half as long as the diameter of an antennal socket (Text-fig. 9).
Six Eurasian and 3 African species (Labiatae, Scrophulariaceae, etc.)
iv. Group of ***cordata***

6 (5) Clypeus almost symmetrical and only slightly rounded in front (Text-figs. 13 and 14). Prelabium always shorter than greatest measure of eye (Text-fig. 21). Pronotum pale except in 3 dark-legged species from SE. Asia (which have very slender antennae with the flagellum no broader than the 2nd segment). Dealt with in two sections: (a) *lugens-nigromaculata* with 7 spp.; and (b) *rosae-liberta* with 6 spp.
Twelve Eurasian species and one in Madagascar (Cruciferae and Crassulaceae)
v. Group of ***rosae***

– Clypeus clearly asymmetrical (Text-fig. 17) or ± angularly produced medially in front (Text-figs. 15 and 16). Prelabium often as long or longer than greatest measure of eye (Text-fig. 22). Pronotum often black but then flagellum broader than 2nd antennal segment. Dealt with in three complexes: (a) *dissona* with 4 spp.; (b) *furvipennis* with 8 spp.; and (c) *nigripes* with 4 spp. Sixteen African species (Cruciferae and ? Labiatae) . . vi. Group of ***furvipennis***

7 (4) Clypeus very short and truncate in front or very slightly emarginate (Text-fig. 18).
One African species (Cruciferae) . . . . vii. Group of ***himantopus***

– Clypeus excised medially in front (Text-figs. 19 and 20).
Six African species (Cruciferae) . . . . viii. Group of ***vollenhoveni***

(i) Group of ***scutellariae***

Clypeus with symmetrically sinuate front margin, not angled laterally. Prelabium shorter than greatest measure of an eye. Tibial spurs long (inner hind spur at least as long as apical width of tibia). ♀ hypopygium scarcely emarginate behind. Claws with inner tooth. On Labiatae (*Scutellaria*).

1 Mesosternum yellow. Mesonotum densely pubescent all over. Tibial spur normal (inner hind tibial spur more than three-quarters as long as apical breadth of tibia and about five times as long as broad). Saw with less prominent teeth (Text-fig. 51).
[Antenna with only segments 8 or 9 onwards transverse] 2

– Underthorax with at least mesosternum black. Mesonotum sparsely pubescent and subglabrous behind. Tibial spur very stout and short (inner hind tibial spur only about three times longer than broad and two-thirds as long as apical breadth of hind tibia). Saw with very prominent teeth (Text-fig. 52) . . 3

2 (1) Pro- and mesothorax entirely yellow. 5–5·5 mm.
[East Siberia] . . . . . ♂♀ ***scutellariae flammula*** (Zhelochovtsev)

– Mesonotum at least partly black (in the darkest forms entirely black; in the lightest forms with the scutellum and sides of front and lateral lobes yellow); and on the underthorax the mesepimeron may be ±black. 4·5–6 mm.
[Larvae on *Scutellaria galericulata* L., and *minor* L. Europe and West Asia (Fergan Mountains, Kirghiz)] . . ♂♀ ***scutellariae scutellariae*** Cameron

3 (1) Antenna with 6th and following segments broader than long. Thorax including tegula yellow with black flecks on the fore lobes and posteriorly on the lateral mesonotal lobes, the mesosternum, ± mesepimeron and ± the metanotum; 1st tergite with only a medial black fleck. 6–7 mm.
[Palestine] . . . . ♂♀ ***cuspidata*** Benson

– Antenna with only 9th and following segments broader than long. Thorax entirely black together with tegula and 1st tergite. 5–6 mm. [Transcaucasia] . . . . ♂♀ ***dimidiata*** Konow

Athalia scutellariae scutellariae Cameron

Athalia scutellariae* Cameron, P., 1880, *Ent. mon. Mag.* **17 : 66.
Dentathalia scutellariae (Cameron) Benson, R. B., 1931, *Ent. mon Mag.* **67** : 111.
Dentathalia galericulatae* Kontuniemi, T., 1951, *Acta ent. fenn.* **9 : 44.
Athalia scutellariae scutellariae Cameron, Benson, 1954, *Bull. Brit. Mus.* (*Nat. Hist.*) *Ent.* **3** (7) : 278.
Larva : Lorenz, H. & Kraus, M., 1957, *Abh. Larvalsyst. Insekt.* **1** : 89.

Athalia scutellariae flammula Zhelochovtsev

Athalia flammula Zhelochovtsev, 1927, *Ent. Mitt.* **16** : 82.
Athalia scutellariae flammula Zhelochovtsev, Benson, 1954, *Bull. Brit. Mus.* (*Nat. Hist.*) *Ent.* **3** (7) : 278.

Athalia cuspidata Benson

Athalia cuspidata* Benson, 1954, *Bull. Brit. Mus.* (*Nat. Hist.*), *Ent.* **3 (7) : 277–278.

Athalia dimidiata Konow

Athalia dimidiata* Konow, 1891, *Wien. ent. Ztg.* **10 : 42.

(ii) Group of ***bicolor***

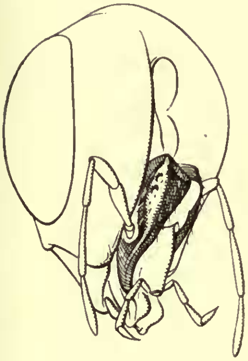
Front margin of clypeus each side with an angle that separates off a lateral margin more than half as long as the diameter of an antennal socket (Text-fig. 10). Antenna with 7th or even 6th and following segments broader than long (cf. Text-fig. 4). Prelabium longer than greatest measure of an eye (Text-fig. 22). Antennal sockets further apart than diameter of a socket (Text-fig. 10). Head and thorax with dense short pile. Tibial spurs short (inner hind tibial spur not more than two-thirds apical width of tibia) (Text-fig. 57). Claws simple. Hypopygium of ♀ at most slightly emarginate each side of middle (Text-fig. 32).

1 Clypeus truncate in front and medially about as long as the distance between the antennal sockets 2
– Clypeus produced in front and medially at least one and a quarter times as long as the distance between the antennal sockets (Text-fig. 10).
[Prelabium longer than greatest measure of eye. 1st tergite black and most of thorax (except tegula and in ♀ also ± prothorax which are yellow). Head and thorax dull with very fine sculpture and pubescence brownish on mesonotum. Inner hind tibial spur only about half as long as apical width of tibia (Text-fig. 57). Saw as in Text-fig. 51. 5–7 mm. Adults at flowers of *Ranunculus* (? foodplant). Europe, Mediterranean, Asia Minor, Transcaucasia to Turkmen Republic . . . . ♂♀ ***bicolor*** Lepeletier
2 (1) Thorax including tegula black. Prelabium longer than greatest measure of eye 3
– Thorax with at least edge of pronotum and apex of pronotum and apex of tegula yellow. Prelabium longer or shorter than eye 4

3 (2) Antenna only with 7th segment onwards broader than long and the 8th is only about one and a half times as broad as long. Saw as in Text-fig. 46. 5–6 mm.
[Hungary and South-East Europe, Asia Minor and Transcaucasia]
♂♀ ***maculata*** Mocsáry

– Antenna strongly clubbed with 5th segment onwards broader than long and the 8th is about twice as broad as long. Saw as in Text-fig. 51. 5–6 mm.
[Asia Minor] . . . . ♂♀ ***paveli*** Mocsáry

21



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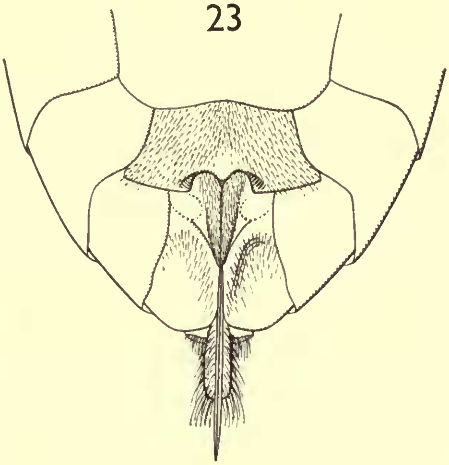

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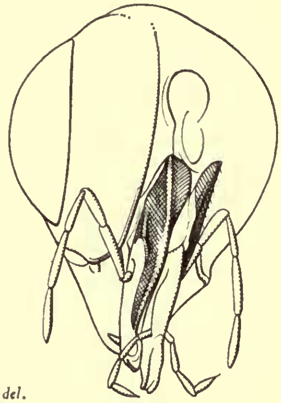


Arthur Smith del.

FIGS. 21–22. Head in left posteriolateral view to show length of tongue (prelabium) compared to length of eye in : 21, *Athalia rosae* ♀ ; 22, *A. glabricollis* ♀.

FIG. 23. Apex of abdomen below to show position of hypopygium (last ventral sternite) in *Athalia rosae* ♀.

4 (2) Mesonotum with at least lateral lobes entirely yellow. Middle tibia ± darkened apically. Saw as in Text-fig. 51. 5–6 mm.
[East Siberia (Irkutsk and Amur)]. . . . . . ♂♀ ***decorata*** Konow

– Mesonotum with at least front and lateral lobes entirely black. Middle tibia pale apically. Saw as in Text-fig. 45. 5–6 mm.
[Central and South-East Europe, Asia Minor and Transcaucasia]
♂♀ ***rufoscutellata*** Mocsáry

Athalia bicolor Lepeletier

Tenthredo annulata Fabricius, 1787, *Mant. Insect.* **1** : 253 *nec.* Geoffroy, 1785.
Athalia bicolor Lepeletier, 1823, *Mon. Tenthr.* : 23.
Athalia richardi Lepeletier, 1823, *Mon. Tenthr.* : 23.

Athalia maculata Mocsáry

Athalia maculata* Mocsáry, 1879, *Természetr. Füz.* **3 : 117.

Athalia paveli Mocsáry

Athalia paveli* Mocsáry, 1879, *Természetr. Füz.* **3 : 117.

Athalia rufoscutellata Mocsáry

Athalia rufoscutellata Mocsáry, 1879, *Természetr. Füz.* **3** : 116.
Athalia maritima* W. F. Kirby, 1884, *Ent. mon. Mag.* **20 : 215.

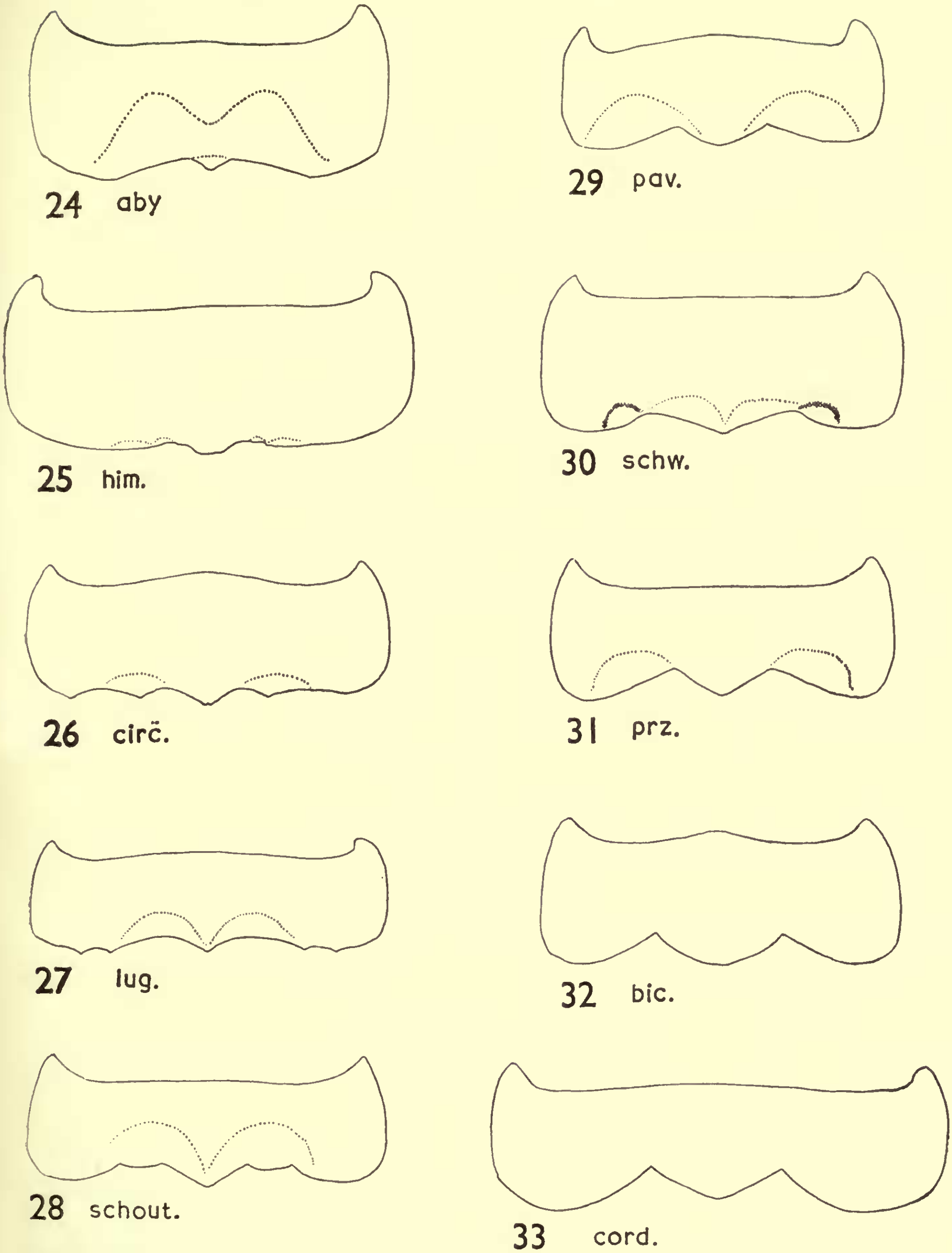
Athalia decorata Konow

Athalia decorata* Konow, 1900, *Ent. Nachr.* **26 : 120.

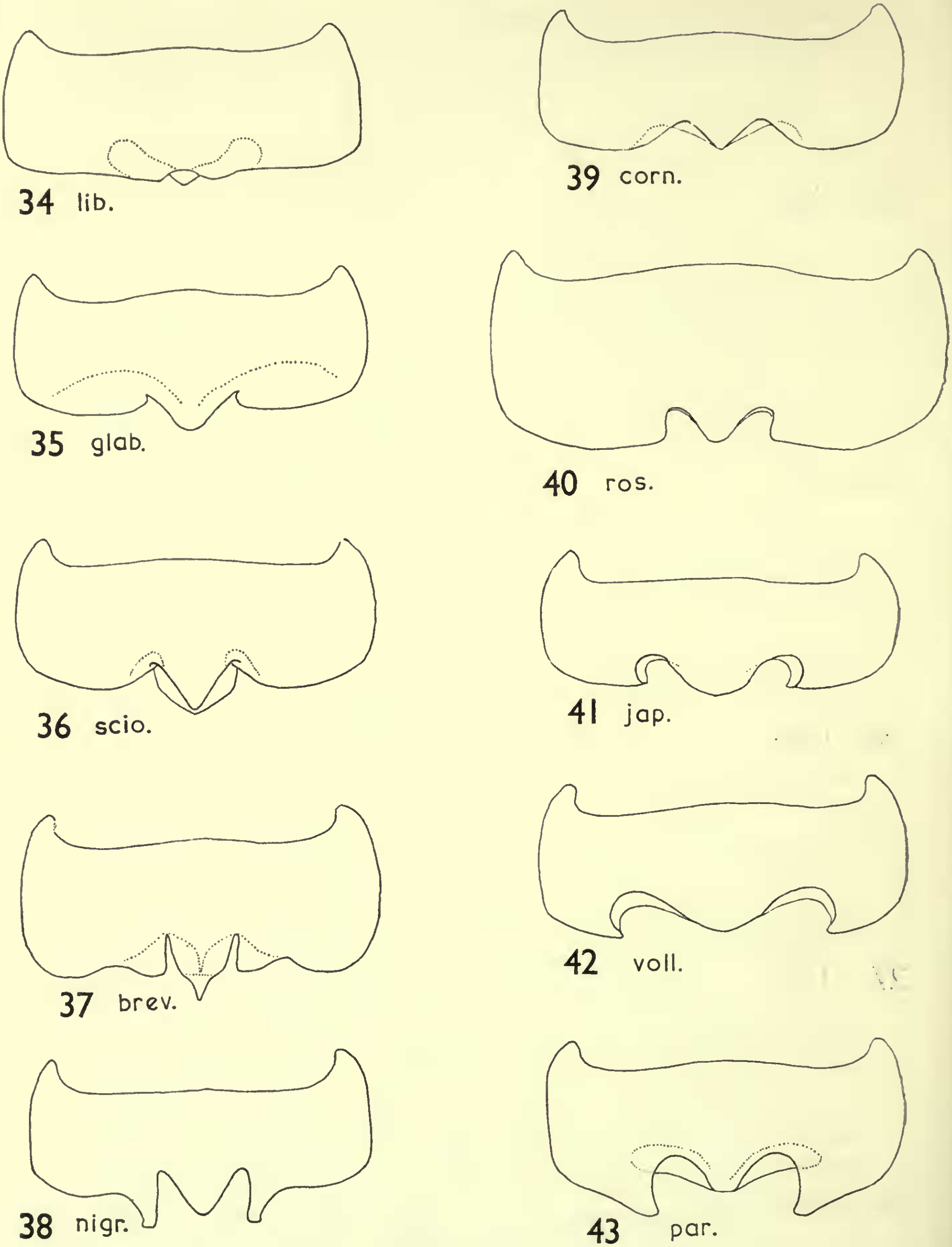
(iii) Group of *glabricollis*

Clypeus symmetrically rounded in front (Text-fig. 12), not angled laterally, or the angle is so close to the mandibular articulation that the lateral portion of the clypeus is less than half the diameter of an antennal socket (Text-fig. 11). Prelabium sometimes longer than greatest measure of an eye (Text-fig. 22). Antenna with 7th or even 6th and following segments broader than long (Text-figs. 3 and 4). Tibial spurs short (inner hind tibial spur at most less than three-quarters apical width of tibia) (Text-fig. 57). Claws simple. On Cruciferae.

1 Pronotum and mesopleura mainly black 2
– Pronotum and mesopleura mainly yellow (Saw as in Text-fig. 45) . . . 3
2 Prelabium shorter than greatest measure of eye (Text-fig. 21). Tegula and costa at extreme base pale. Underthorax ± with a pale band across the mesopleura in addition to the pale mesosternum. ♀ hypopygium as in Text-fig. 24. Saw as in Text-fig. 51. 5–8 mm.
[Ethiopia, Kenya, Uganda and Tanganyika] . . ♂♀ ***abyssinica*** Forsius
– Prelabium longer than greatest measure of eye. Tegula and costa entirely black. Underthorax with mesosternum pale but mesopleura entirely black. ♀ hypopygium as in Text-fig. 31. Saw as in Text-fig. 45. 5–8 mm.
[Congo, Rhodesia, Nyasaland, Natal, Transvaal, Basutoland and Cape Province] . . . . ♂♀ ***incomta*** Konow
3 (2) Mesonotum ± black. Either at least middle legs with black-tipped tibia and tarsi, or prelabium shorter than greatest measure of eye (Text-fig. 21) . . . 4
– Thorax, middle and front legs entirely yellow. Prelabium longer than greatest measure of eye (Text-fig. 22). 5–7 mm.
[Antenna with 7th segment onwards broader than long. ♀ hypopygium tridentate (Text-fig. 38). Saw not seen. Somaliland and Sudan] ♂♀ ***nigriceps*** Konow
4 (3) Prelabium as long as or longer than greatest measure of eye (Text-fig. 22) . . 5
– Prelabium shorter than greatest measure of eye (Text-fig. 21) . . . 6
5 (4) Mesonotum densely pubescent all over. Front and middle legs with at most the apices of the tibiae and tarsi brownish. Wings slightly infuscate apically. ♀ malar space about two ninths distance between eye-sockets. ♀ antenna (Text-fig. 3) scarcely longer than width of head (1·1 : 1·0). ♀ hypopygium excised behind (Text-fig. 37). 6–7 mm.
[Nyasaland, Rhodesia, Basutoland and Cape Province] ♂♀ ***brevicornis*** sp. nov.
– Mesonotum sparsely pubescent with the convex middle area of the side lobes glabrous. Front and middle legs with at least the middle tibiae and tarsi ringed with black apically. Wings subhyaline. ♀ malar space about two-sevenths distance between antennal sockets. ♀ antenna clearly longer than head width (1·2 : 1·0). ♀ hypopygium scarcely emarginate behind (Text-fig. 35). 5–7 mm.
[Subspecies *glabricollis* from Central, Western and South-western Europe, and Mediterranean North Africa, has little more than the basal half of *C* of fore wing yellow.



FIGS. 24–33. ♀ hypopygium in : 24, *Athalia abyssinica* ; 25, *A. himantopus* ; 26, *A. circularis* ; 27, *A. lugens* ; 28, *A. schoutedeni* ; 29, *A. paveli* ; 30, *A. schweinfurthi* ; 31, *Hypsathalia przewalskyi* ; 32, *Athalia bicolor* ; 33, *A. cordata*.



FIGS. 34–43. ♀ hypopygium in : 34, *Athalia liberta* ; 35, *A. glabricollis* ; 36, *A. scioensis* ; 37, *A. brevicornis* ; 38, *A. nigriceps* ; 39, *A. cornubiae* ; 40, *A. rosae* ; 41, *A. japonica* ; 42, *A. vollenhoveni* ; 43, *A. paradoxa*.

Subspecies *meridiana* Benson, which occurs in Greece, Turkey, Palestine, South-western Iran and Samarkand, has almost the basal three quarters of *C* in the fore wing yellow.

Larva on Cruciferae : *Diplotaxis tenuifolia* (L.) D.C., *Erysimum*, *Raphanus raphanistrum* L., *Sinapis alba* L., and *Sisymbrium*] ♂♀ ***glabricollis*** C. G. Thomson

6 (4) Antenna less swollen apically, with 8th segment scarcely broader than 1st. ♀ hypopygium slightly emarginate behind each side of middle (c.f. Text-fig. 32) 7

– Antenna strongly swollen apically, with 8th segment about one and a half times as broad as 1st segment. ♀ hypopygium scarcely emarginate behind.

[Mesonotum sparsely pubescent, subglabrous behind. South-West Africa] ♂♀ ***turneri*** Forsius

7 (6) Clypeus angularly produced medially where it is more than twice as long as distance between antennal sockets. Mesonotum sparingly pubescent all over, front and lateral lobes entirely black in ♀, though yellow at margins in ♂. Costa of fore wing with at most basal third yellow. Malar space in ♀ more than one-quarter distance between antennal sockets. 5–7 mm.

[Coastal species of East Africa : Kenya (Mombasa), Zanzibar and Mozambique (Inhaca Island)] . . . . . . ♂♀ ***zanzibarica*** Forsius

– Clypeus subtruncate in front and scarcely longer medially than distance between antennal sockets. Mesonotum with lobes partly glabrous and though front and lateral lobes are entirely black in ♀ they are ± yellow margined in ♂. Costa of fore wing with about basal half yellow. Malar space linear in both sexes, much less than one-quarter distance between antennal sockets. 5–7 mm.

[Species of Steppe lands of Palestine, Transcaucasia, Mesopotamia to Turkmen and Uzbek Republics] . . . . . . ♂♀ ***ahngeri*** Kujev

Athalia abyssinica Forsius

Athalia abyssinica* Forsius, 1930, *Notul. ent. Helsingf.* **10 : 67.

A. incomta Konow

Athalia bicolor Saussure, 1892 *in* Distant *Nat* : *Transvaal* : 226, *nec* Lepeletier.
Athalia incomta* Konow, 1908, *Z. syst. Hym. Dipt.* **8 : 168.
Athalia laevigata* Mocsáry, 1909, *Ann. hist.-nat. Mus. hung.* **7 : 12.

This species was not distinguished by Forsius (1931) from *A. mellis* Benson sp. n. (p. 375).

Athalia nigriceps Konow

Athalia nigriceps* Konow, 1908, *Z. syst. Hym. Dipt.* **8 : 165–166.

***Athalia brevicornis* sp. nov.**

♀ *Colour* yellow with the following parts black : head above, clypeus and gena, antenna above, mesonotum (except ± scutellum behind), and ± metanotum, apical tarsal segment of front and middle legs, apex of tibia and apices of tarsal segments of hind legs. Wings yellowish basally and slightly infuscate apically ; stigma, costa (except ± basal third), and subcosta (except extreme base) black ; rest of venation yellowish in basal part and piceous in apical part of wings. Length 6–7 mm.

Structure : Antennae 9–10 segmented, scarcely longer than width of head (Text-fig. 3) ; 7th segment onwards broader than long. Prelabium longer than greatest measure of eye as 1·2 : 1·0. Malar space about equal to the diameters of two compound eye facets, or two-ninths of distance between eye sockets (0·24 : 1·00). Hind inner apical tibial spur shorter than apical width of tibia as 0·72 : 1·00. Hypopygium almost tridentate apically (Text-fig. 37). Saw with shallow teeth (cf. Text-fig. 45).

Pubescence fairly evenly distributed over head and thorax, and pale throughout.

♂ as ♀ except for sexual characters and that the antenna is longer than head width as 1·4 : 1·0, the prelabium is scarcely longer than the eye and the malar space less than one compound eye facet.

BASUTOLAND, Maseru, 1 ♀ (Holotype, B.M. Hym.1.773), 7.i.1953 (*C. Jacot-Guillarmod*).

SOUTHERN RHODESIA, Khami, 2 ♀, 9.xi.1938 (*G. Arnold*) (B.M.).

SOUTH AFRICA, Cape Province, Aliwal North, 1 ♂, 1 ♀, xii.1922 (*R. E. Turner*) (B.M.).

The specimens collected by Turner were named and recorded by Forsius (1931) as *A. dissona.*

Athalia glabricollis glabricollis C. G. Thomson

Athalia glabricollis* C. G. Thomson, 1870, *Opusc. ent.* **2 : 268.
Larva : Lorenz & Kraus, 1957, *Abh. Larvalsyst. Insekt.* **1** : 89–91.

Athalia glabricollis meridiana Benson

Athalia glabricollis meridiana* Benson, 1954, *Bull. Brit. Mus. (Nat. Hist.) Ent.* **3 (7) : 279.

Athalia turneri Forsius

Athalia turneri* Forsius, 1931, *Ann. Mag. nat. Hist.* (10) **8 : 21.

Athalia zanzibarica Forsius

Athalia zanzibarica* Forsius, 1931, *Ann. Mag. nat. Hist.* (10) **8 : 22.

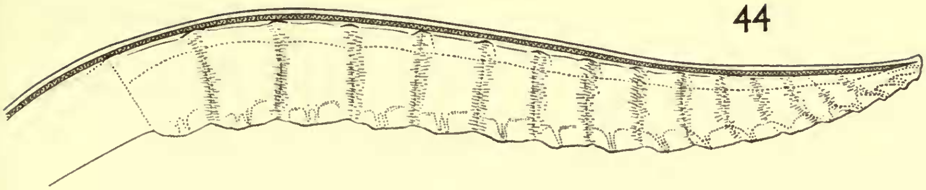
Athalia ahngeri Kokujev

Athalia ahngeri Kokujev, 1909, *Rev. Ent. U.R.S.S.* **9** : 246.

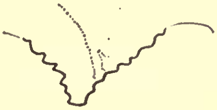
(iv) Group of ***cordata***

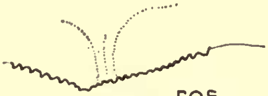
Front margin of clypeus each side with an angle that separates off a lateral margin more than half as long as the distance between the antennal sockets (Text-fig. 9). Prelabium shorter than greatest measure of an eye (Text-fig. 21). Antenna only with segments beyond 8th broader than long (Text-fig. 5). Tibial spurs long (inner hind spur about as long as tibial width (Text-fig. 56)). Claws simple. On Compositae, Labiatae, Plantaginaceae and Scrophulariaceae.

44

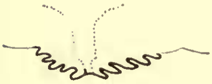


52 cusp.



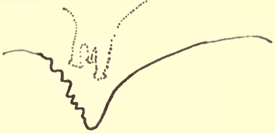


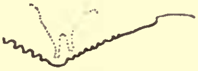
45 ros.



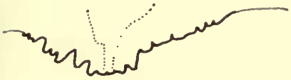
46 pict.

53 mell.



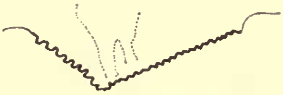


50 ann.

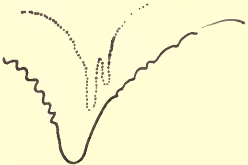


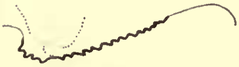
47 corn.

51 scut.

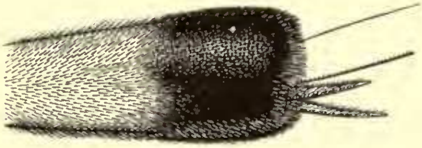


54 cord.



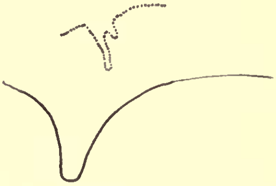


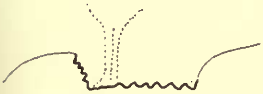
48 scio.



56 ros.

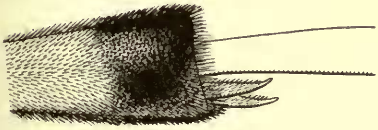
55 cerb.





49 pull.

57 bic.



58 arm.

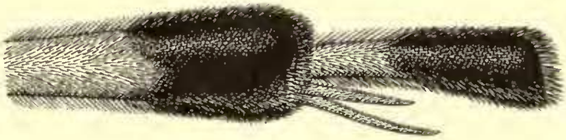


FIG. 44. Saw of *Athalia rosae*.

FIGS. 45–54. 10th tooth from apex of saw of: 45, *Athalia rosae*; 46, *A. picta*; 47, *A. cornubiae*; 48, *A. scioensis*; 49, *A. pullicoma*; 50, *Hennedyia annulitarsis*; 51, *Athalia scutellariae*; 52, *A. cuspidata*; 53, *A. mellis*; 54, *A. cordata*; 55, *A. cerberus*.

FIGS. 56–58. Apex of hind tibia to show spurs in: 56, *Athalia rosae* ♀; 57, *A. bicolor* ♀; 58, *A. armata* ♀.

1 Either clypeus dull and pubescent, or underthorax pale and hind tibia is only ringed with black apically. Saw with shallow blunt teeth 2

– Clypeus shining and only sparsely pubescent. Either underthorax black or hind tibia mainly infuscate. Saw with prominent and sharp teeth (Text-fig. 54) . 8

2 (1) All lobes of mesonotum black or ± marked with black 3

– Lateral lobes of mesonotum entirely yellow (E. Asia) 6

3 (2) Extreme base of *C* of fore wing entirely black (Africa) 4

– Extreme base of *C* of fore wing pale (Eurasia).

[Underthorax normally with a black mesosterno-pleural line and mesepimeron : the black may be entirely obsolete or may spread to cover the whole underthorax. Front tibia scarcely infuscate. The form from Manchuria, Kashmir and no doubt from other parts of East Asia has more infuscate wings (subsp. *melanoptera* Benson). ♀ malar space about two-fifths as long as distance between antennal sockets. ♀ hypopygium scarcely emarginate behind (Text-fig. 26) ; saw as in Text-fig. 45. 4–6 mm. Larva on *Arctium lappa* L., *Glechoma hederacea* L., *Plantago* sp. and *Veronica*. Europe including Mediterranean, Asia Minor, Caucasus, Siberia to Japan and mountains of Central Asia from Kopet Dag to the Pamirs, Altai and Western Himalayas] . ***circularis*** (Klug)

4 (3) Front and middle tibiae clearly ringed with black apically. Tegula, pronotum, and lower mesopleura often yellow 5

– Front and middle tibiae not ringed with black apically. Tegula, pronotum and mesopleura black.

[Wings bicoloured with apices fuscous and bases hyaline. Natal] ♀ ***xantha*** sp. n.

5 (4) Pronotum and tegula ± black. Hypopygium in ♀ deeply excised behind each side of middle. Saw as in Text-fig. 48.

[At high altitudes in Ethiopia, Aberdare Mountains, etc. and in the Congo smoky-winged forms occur : in the darker forms the pronotum is entirely black and the upper part of the mesopleura is ± infuscate. Southern Arabia (Yemen) and Ethiopia and Congo to Natal] . . . ♂♀ ***scioensis*** Gribodo

– Pronotum and tegula yellow. Hypopygium in ♀ almost entire behind. Saw (Text-fig. 47).

[Close in structure to *circularis* Klug. but the clypeus is less strongly angled laterally than in that species, Southern Arabia (Yemen) and Eritrea, Kenya, Uganda and Congo to the Cape] . . . . . . ♂♀ ***concors*** Konow

6 (2) Antenna with 8th segment onwards broader than long. Front tibia at most slightly brownish apically 7

– Antenna only from 10th segment broader than long. Front tibia ringed with black apically.

[Abdomen with 1st tergite black. Saw as in Text-fig. 45. 7 mm. China (South Kansu)] . . . . ♀ ***hummeli*** Benson

7 (6) Abdomen with 1st tergite ± black. Saw with large denticulations to teeth (Text-fig. 46).

[China (South Kansu)] . . . . ♀ ***picta*** sp. nov.

– Abdomen entirely pale except for sawsheath. Saw with only fine denticulations to teeth (c.f. Text-fig. 45).

[India (Chakrata)] . . . . ♂♀ ***indiana*** sp. nov.

8 (1) Thorax except for pronotum and tegula mainly black. Wings subhyaline. Tibiae and tarsi black at apices only ; femora entirely yellow. 4–7 mm.

[Larva on *Ajuga*, *Antirrhinum orontium* L. and *Plantago*. Europe including Mediterranean and Asia Minor to Caucasus] . . . ♂♀ ***cordata*** Lepeletier

– Thorax except for metanotum almost entirely reddish-yellow. Wings ± infuscate. Tibiae and tarsi mainly infuscate ; femora ± blackened apically. 5–6 mm.

[Larvae on *Veronica*. Japan, China, Kashmir and Assam.] ♂♀ ***kashmirensis*** Benson

Athalia circularis (Klug), **comb. nov.**

Tenthredo circularis Klug, 1815, *Mag. Ges. naturf. Fr. Berlin*, **7** : 129.
Athalia lineolata Lepeletier, 1823, *Mon. Tenthred.* : 22, **syn. nov.**
Athalia bolivari* Dusmet, 1896, *An. Soc. esp. Hist. nat.* **25 : 146, **syn. nov.**
Athalia cordatoides* Kontuniemi, 1951, *Acta ent. fenn.* **9 : 40, **syn. nov.**
Athalia longifoliae* Kontuniemi, 1951, *l.c.* : 42, **syn. nov.
Larva : Lorenz & Kraus, 1957, *Abh. Larvalsyst. Insekt.* **1** : 88–90.

Tenthredo circularis Klug seems by the rules to be the earliest available name for this species. It appeared first as a new name accompanied by a recognizable description but placed in synonymy by the original author.

Athalia circularis melanoptera **subsp. nov.**

Differs from typical subspecies in that the wings are strongly infuscate. MANCHURIA, Harbin, 2 ♂ (including holotype, B.M. Hym. 1.778) 1.viii.1943 (*P. Alin*). KASHMIR, 5–6,000 ft. 1 ♂, v.1901 (*C. G. Nurse*).

Athalia xantha **sp. nov.**

♀ *Colour.* Head black except for the white labrum, mandible bases and palps, and the piceous clypeus. Thorax black except for the yellowish mesosternum and ± metanotum. Legs yellow, fore and middle pairs entirely so, hind pair with black ringed apices of tibia and tarsomeres. Abdomen entirely yellow save for sawsheath. Wings sharply bicoloured, apical half infuscate, basal half hyaline ; stigma, costa, subcosta and whole of venation in apical half of wings black ; rest of venation in basal half of wings yellow. Length 7·5 mm.

Structure. Antenna 12-segmented with only 8th and following segments broader than long. Malar space about as long as the diameter of a single facet of a compound eye. Inner hind tibial spur almost as long as apical width of tibia (1·0 : 1·2). Hypopygium as in Text-fig. 35. Saw as in Text-fig. 45.

Pubescence. Head and underthorax with normal dense pale pubescence ; mesonotum with brownish pubescence becoming sparse in the middle of each lobe.

NATAL, Weenan, 1 ♀ (Holotype, B.M. Hym. 1.777), ix–x.1925 (*H. P. Thomasset*). (In British Museum.)

Athalia scioensis Gribodo

Athalia scioensis* Gribodo, 1879, *Ann. Mus. Stor. nat. Genova*, **14 : 347.
A. fumosa* Gribodo, 1879, *l.c.*, **syn. nov.

Specimens of this species in the British Museum examined by Forsius (1931) were labelled and recorded by him as *A. dissona* var. *concors*, *A. ?fumosa*, *A. scioensis* and *A. furvipennis*.

Athalia concors Konow

Athalia concors* Konow, 1908, *Z. syst. Hym. Dipt.* **8 : 168.
Athalia similis* Mocsáry, 1909, *Ann. hist.-nat. Mus. hung.* **7 : 12, **syn. nov.**
Athalia erythraspides* Enslin, 1914, *Rev. Zool. Bot. afr.* **3 : 303, **syn. nov.**

Specimens of this species in the British Museum examined by Forsius (1931) were labelled and recorded by him as *A. dissona*, *A. dissona* var. *concors* or *A. dissona* var. *mashonensis*.

***Athalia picta* sp. nov.**

Athalia decorata Konow, Benson, 1932, *Ann. Mag. nat. Hist.* (10) **9** : 528, and figs. 1*a*, clypeus, 1*b*, hypopygium, and 1*c*, saw, *nec* Konow.

♀ *Colour.* Head black except for the white labrum, clypeus and mandible bases and palps ; thorax and abdomen yellow, except for middle of front lobe of mesonotum, post-tergite of scutellum, metanotum, 1st abdominal tergite, and sawsheath as well as apices of hind tibiae and middle and hind tarsal segments. Wings hyaline ; stigma, costa (except basal fifth) and subcosta (except extreme base) and venation black or brown. Length 6–7 mm.

Structure. Antenna 12-segmented with only 10th and 11th broader than long. Malar space one-third as long as distance between antennal sockets. Inner hind tibial spur almost as long as apical width of tibia (1·0 : 1·1). Hypopygium scarcely emarginate each side, saw with shallow teeth and 6–7 large denticulations to each tooth (Text-fig. 46).

Pubescence pale throughout, dense above on head and mesonotum, very sparse on the shining clypeus and sparse on the mesosternum which is glabrous below.

♂ as ♀ except for sexual characters, the pale underside of the antenna and very short malar space.

China, South Kansu, Lu-pa-sze, ♂ and ♀ (Holotype) *in coitu* and 3 ♀ (Stockholm Museum), 2 ♀ (British Museum), 11.vii.1930 (*Dr. Hummel*).

Athalia hummeli Benson

Athalia hummeli* Benson, 1932, *Ann. Mag. nat. Hist.* (10) **9 : 528–529, figs. 2*a*, clypeus, 2*b*, hypopygium.

***Athalia indiana* sp. nov.**

♀ *Colour.* Yellow except for the following which are black : head capsule above clypeus and gena, front lobe of mesonotum apart from margins, apices of middle and hind tibiae and of all tarsal segments and sawsheath. Wings slightly infuscate apically and flavescent basally ; stigma, apical two-thirds of costa and of subcosta and rest of venation in apical half of wings brown or black ; basal one-third of costa and of subcosta, and rest of venation in basal half of wings yellowish. Length 7 mm.

Structure. Antenna 12–13-segmented ; 8th and following segments broader than long. Prelabium a little shorter than greatest measure of an eye. Malar space to distance between antennal sockets as 1·0 : 3·8. Inner hind tibial spur about two-thirds as long as apical width of tibia. Hypopygium emarginate each side of middle. Saw as in Text-fig. 51.

Pubescence. On head and thorax pale, becoming sparse on temples behind, and middle of mesonotal and scutellar lobes; on the underthorax is a glabrous area covering the meso-pleurosternal line.

♂ as ♀ apart from sexual characters and that the antenna is pale beneath, the front tarsal segments are scarcely darkened apically and the middle legs only obscurely marked with dark colour. The malar space is barely as long as the diameter of a single compound eye facet. Length 6 mm.

INDIA, Chakrata: Bodyar 8,000 ft., 1 ♀ (Holotype, B.M. Hym. 772), 21.vi.1923 (*C. F. E. Beeson*); Lambatach, 7,600 ft., 1 ♂, 9.vi.1924 (*B. M. Bhatia*) (B.M.).

Athalia cordata Lepeletier

Athalia cordata Lepeletier, 1823, *Mon. Tenthr.*: 22.
Athalia blanchardi Brullé *in* Lepeletier, 1846, *Hist. nat. Ins. Hym.* **4**: 663.
Larva: Konow, 1901, *Z. syst. Hym. Dipt.* **1**: 59.
Larva: Rungs, 1949, *Rev. Path. vég.* **28** (3): 170–172.

Athalia kashmirensis Benson, **stat. nov.**

Athalia cordata kashmirensis* Benson, 1932, *Ann. Mag. nat. Hist.* (10) **9: 187.
Athalia veronicae Takeuchi, 1949, *Trans. Kansai. ent. Soc.* **14** (2): 49, nom. nud.
Athalia veronicae Takeuchi, 1952. A generic classification of the Japanese Tenthredinidae (Hymenoptera: Symphyta) Kyoto: 29.

(v) Group of ***rosae***

Clypeus symmetrically rounded in front and not angled laterally (Text-figs. 13 and 14) or angle is so close to the edge that the lateral portion of the clypeal front margin is shorter than half the distance between the antennal sockets. Prelabium shorter than greatest measure of eye (Text-fig. 21). Tibial spurs long (Text-fig. 56). (Inner hind spur at least as long as apical width of tibia.) Claws simple. Pronotum usually pale. Saw as in Text-figs. 44–45 except in *cornubiae* (Text-fig. 47). On Cruciferae and Crassulaceae.

KEY TO SPECIES SECTIONS

A All tibiae at most only ringed apically with black and femora all yellow (a) ***rosae*** and ***liberta*** complexes
B Hind tibiae (at least over apical two-fifths above) or middle femur mainly infuscate . . . . . . (b) ***lugens*** and ***nigromaculata*** complexes

(a) ***rosae*** and ***liberta*** complexes

1 Middle lobe of mesonotum entirely yellow 2
– Middle lobe of mesonotum black or at least partly black 4
2 (1) Lateral lobe of mesonotum ± marked with black. Malar space of ♀ (Text-fig. 13) about half distance between antennal sockets and in ♂ (Text-fig. 14) about one-quarter. Thorax densely pubescent all over. Hind tibia with less than apical quarter infuscate 6–8 mm. ♂♀ (forms of *rosae*) 3
– Lateral lobes of mesonotum entirely yellow. Malar space of ♀ only about one-fifth distance between antennal sockets. Thorax shining and sparsely pubescent,

subglabrous on mesonotum behind and on mesosternum. Hind tibia with apical third infuscate. Saw not seen. 8 mm.

[Punjab] . . . . ♀ ***antennata*** Cameron

3 (2) Black fleck on lateral lobe of mesonotum does not extend forwards beyond hind margin of tegula. Wings subhyaline in the north of its range, becoming more and more infuscate towards the south and in Japan.

[Larvae on Cruciferae : *Brassica rapa* L., *Raphanus raphanistrum* L., etc. E. Asia, E. Siberia, Manchuria to Himalayas and Japan] ***rosae ruficornis*** Jakovlev

– Black fleck on lateral lobe of mesonotum extends forwards at least beyond the level of the hind margin of the tegula. Wings subhyaline in north of range, becoming more and more infuscate towards the south.

[Larvae on Cruciferae : *Armoracia rusticana* Gaertn., Mey. & Scherb., *Barbarea* sp., *Brassica rapa* L., and *napus* L., *Raphanus raphanistrum* L., *Rorippa amphibia* (L.) Besser, *Sinapis alba* L., and *arvensis* L., and *Sisymbrium* spp. Temperate Europe to South West Siberia, Mediterranean region including North Africa, Palestine and Asia Minor to Caucasus and Iran.] . ***rosae rosae*** (L.)

4 (1) Mesonotum mainly black in both sexes, the lateral lobes at most with their outer edges yellow ; ♂ with at least scutellum partly black. Malar space (♀) one-third to one-quarter as long as distance between antennal sockets . . 5

– Mesonotum in ♀ yellow with a black fleck on the middle and on each of the lateral lobes ; in the ♂ the black flecks may spread to cover all of these lobes but at least the scutellum is entirely yellow. Malar space (♀) about one-fifth as long as distance between antennal sockets.

4–6 mm. Larvae on Cruciferae : *Brassica rapa* L., and *Raphanus raphanistrum* L. Madagascar] . . . . . . ♂♀ ***malagassa*** Saussure

5 (4) Antenna with at most 9th segment onwards broader than long. Hypopygium in ♀ less emarginate (Text-figs. 34 and 39) 6

– Antenna with 7th or 8th segments onwards broader than long. Hypopygium of ♀ deeply excised (Text-fig. 43) on hind margin.

[6–7 mm. Alps of France, Switzerland and Austria, and Macedonia]

♂♀ ***paradoxa*** Konow

6 (5) Hypopygium of ♀ strongly emarginate each side of middle (Text-fig. 39). Saw as in Text-fig. 47. Parthenogenetic species with ♂ unknown. 5–7 mm.

[Larva on *Sedum album* L. Central and South Europe, Asia Minor, Transcausia and South West Iran] . . . . ♀ ***cornubiae*** Benson

– Hypopygium of ♀ with hind margin almost entire (Text-fig. 34). Saw as in Text-fig. 45 or ♂. 5–7 mm.

[Subspecies *liberta* Kl. from all Europe and Mediterranean to Caucasus, South West Iran and mountains of Central Asia to Uzbek and Kirghiz and eastwards to the Amur region in East Siberia has subhyaline wings.

Subspecies *yanoi* Takeuchi, from Seghalien and Japan, has infuscate wings.

Larva on Cruciferae : *Alliaria petiolata* (Bieb.) Cavara and Grande, *Arabidopsis thaliana* (L.) Heynh., *Cardamine hirsuta* L., and *Sisymbrium officiniale* (L.) Scop.] . . . . ♂♀ ***liberta*** Klug

(b) ***lugens*** and ***nigromaculata*** complexes

1 Abdomen with 6 or more tergites beyond the 1st with a black fleck each side . 2

– Abdomen without black flecks on tergites beyond 1st 3

2 (1) All tibiae, front and middle femora and apex of hind femur mainly black. Hind basitarsus longer than two following segments. ♀ Hypopygium scarcely emarginate (cf. Text-fig. 27). 4·5–6·5 mm.

[Central Asia : Himalayas, (Sikkim, 7,000 ft.) and North East Burma (Kimbaita, 7,000 ft.)] . . . . . . ♂♀ ***sikkimensis*** Benson

– Tibiae as well as middle and hind femora only marked with black apically; front femur entirely yellow. Hind basitarsus only as long as two following segments. ♀ Hypopygium excised each side of middle on hind margin (cf. Text-fig. 39). 6–8·5 mm.
[Central Asia: Himalayas (Tibet, Kashmir, India 9,000–12,000 ft.)]
♂♀ ***nigromaculata*** Cameron

3 (1) All femora pale, at most tipped with black apically. Pronotum mainly yellow.
[Malar space (♀) about three-sevenths distance between antennal sockets] 4

– Front and middle femora mainly and hind femur at least apically black. Pronotum often mainly infuscate.
[All tibiae and tarsi mainly black. ♀ Hypopygium as in *lugens* (Text-fig. 17)] 7

4 (3) Femora all yellow. All tibiae and tarsi mainly black above. Hypopygium of ♀ only slightly emarginate behind (forms of *lugens* Kl.) 5

– Hind and middle femora tipped with black apically. Front tibiae and all tarsal segments black only apically; middle and hind tibiae also black basally. Hypopygium of ♀ excised on hind margin each side of middle (Text-fig. 41). 5–8 mm.
[Mesothorax entirely reddish-yellow. Larvae on Cruciferae: *Brassica rapa* L., *Raphanus raphanistrum* L. East Asia: East Siberia and Japan.]
♂♀ ***japonica*** Klug

5 (4) Wings strongly infuscate especially basally. Mesonotum variable in colour, usually with at least the lateral margins of the front lobes yellow, and often extensively or mainly yellow. 5–7·5 mm.
[East Asia] 6

– Wings subhyaline or slightly infuscate. Mesonotum usually entirely black. 4–6 mm.
[Europe] . . . . ♂♀ ***lugens lugens*** Klug

6 (5) Mesonotum mainly black; usually with only the margins of the front and middle lobes yellow, though occasionally in females yellow covers all the parts in front of the tegulae. 5–7 mm.
Larvae on Cruciferae: *Brassica rapa* L. and *nigra* (L.) Koch and also *Raphanus raphanistrum* L. Japan] . . . ♂♀ ***lugens infumata*** (Marlatt)

– Mesonotum mainly yellow; in East Siberia the black may extend as far forward as the tegulae in some males but in India and South China to Java the mesonotal lobes including the scutellum are usually entirely yellow. 5–7·5 mm.
[Larvae on Cruciferae: *Brassica nigra* (L.) Koch, *napus* L., and *rapa* L. *Raphanus raphanistrum* L. and *Lepidium sativum* L.
Mainland from Kamtchatka to South India and Malaya as well as Formosa, Borneo, Java etc., in North East Burma (Kimbaiti) at 7,000 ft.]
♂♀ ***lugens proxima*** (Klug)

7 (3) Mesonotum and mesopleura mainly red 8

– Thorax entirely black. 6 mm.
[Malar space of ♀ almost two-fifths distance between antennal sockets. North East Burma (Kimbaiti, 7,000 ft.)] . . ♂♀ ***birmanica*** sp. nov.

8 (7) Malar space in ♀ about half as long as distance between antennal sockets. Frontal area with only a slight medial depression. 5–6 mm.
[Central Asia: China (Kan-Su)] . . . . . . ♀ ***kansuensis*** Benson

– Malar space in ♀ less than one-third distance between antennal sockets. Frontal area with a deep round medial puncture. 5–6 mm.
[Central Asia: China (Szechwan) and North East Burma (Kambaiti, 7,000 ft.)] . . . . ♀ ***scapulata*** Konow

Athalia antennata Cameron

Athalia antennata* Cameron, 1902, *J. Bombay nat. Hist. Soc.* **14 : 447.

Athalia rosae ruficornis (Jakovlev) **comb. nov.**

Athalia spinarum var, *ruficornis* Jakovlev, 1888, *Horae. Soc. ent. ross.* **22** : 373.
Athalia leucostoma* Cameron, 1904, *Z. syst. Hym. Dipt.* **4 : 108.
Athalia spinarum japanensis* Rohwer, 1910, *Proc. U.S. nat. Mus.* **39 : 109.
Larva : Takizawa, M. and Akiyama, T., 1935, *Kontyû*, **9** : 207–220, 1 pl.

Athalia rosae rosae (L.)

**Tenthredo rosae* L., 1758, *Syst. Nat.* p. 557 *nec auctt.*
Tenthredo colibri Christ, 1791, *Nat. Ins.* p. 434.
Tenthredo spinarum Fabricius, 1793, *Ent. syst.* **2** : 110.
Tenthredo centifoliae Panzer, 1798, *Faun. Ins. Germ.* Heft **49**, tab. 18.
Athalia spinarum (Fabricius) Leach 1817 *Zool. Miscell.* **3** : 126.
Larva : Lorenz & Kraus, 1957, *Abh. Larvalsyst. Insekt.* **1** : 90.

Athalia malagassa Saussure

Athalia malagassa Saussure, 1890, *in* Grandidier : *Hist. Madagascar*, pl. 27, fig. 15*a* and *b*.
Athalia malagassa Saussure, Konow, 1908, *Z. syst. Hym. Dipt.* **8** : 166.
Larva : Paulian, 1949, *Mém. Inst. sci. Madagascar*, **3** : 375–382.

Athalia paradoxa Konow

Athalia paradoxa* Konow, 1886, *Dtsch. ent. Z.* **30 : 78.

Athalia cornubiae Benson

Athalia cornubiae* Benson, 1931, *Ent. mon. Mag.* **67 : 110.
Larva : Gradwell, 1957, *Ent. mon. Mag.* **93** : 12.

Athalia liberta liberta (Klug)

Tenthredo rosae var. *liberta* Klug, 1815, *Mag. Ges. naturf. Fr. Berlin*, **7** : 129.
Tenthredo liberta (Klug), Klug, 1817 *in* Germar : *Reise n. Dalmat.* **2** : 257.
Athalia ancilla Lepeletier, 1823, *Mon. Tenthr.* : 22.
Athalia liberta (Klug) Priesner, 1928, *Ent. Mitt.* **27** : 282.
Larva : Lorenz & Kraus, 1957, *Abh. Larvalsyst. Insekt.* **1** : 89–91.

Athalia liberta yanoi Takeuchi

Athalia liberta yanoi Takeuchi, 1952, *Gen. Class. Jap. Tenthredinidae*, pp. 29–30.

Athalia sikkimensis (Benson) **stat. nov.**

Athalia nigromaculata sikkimensis* Benson, 1932, *Ann. Mag. nat. Hist.* (10) **9 : 530–531.

Athalia nigromaculata Cameron

Athalia nigromaculata* Cameron, 1902, *J. Bombay nat. Hist. Soc.* **14 : 446.

Athalia japonica (Klug)

Tenthredo japonica Klug, 1815, *Mag. Ges. naturf. Fr. Berlin,* **7** : 131.
Athalia japonica (Klug) Klug, 1834, *Jahrb. d. Insectenk.* **1** : 253.
Athalia nigronotum Matsumura, 1918, *Thous. Ins. Japan,* Suppl. **4** : 68.
?*Athalia novittata* Kokujev, 1927, *Trav. Comm. Lac Bajkal,* **2** : 64.
Larva : Narutomi, 1931, *Jap. J. appl. Zool.* **3** : 150–152. [In Japanese.]

Athalia lugens lugens (Klug)

Tenthredo lugens Klug, 1815, *Mag. Ges. naturf. Fr. Berlin,* **7** : 129.
Athalia lugens (Klug) Klug, 1834, *Jahrb. d. Insectenk,* **1** : 253.

Athalia lugens infumata (Marlatt)

Phyllotoma infumata* Marlatt, 1898, *Proc. U.S. nat. Mus.* **21 : 494.
Athalia lugens infumata Marlatt, Rohwer, 1910, *Proc. U.S. nat. Mus.* **39** : 110.
Larva : Narutomi, 1931, *Jap. J. appl. Zool.* **3** : 190–192.

Athalia lugens proxima (Klug)

Tenthredo proxima Klug, 1815, *Mag. Ges. naturf. Fr. Berlin,* **7** : 130.
Athalia proxima (Klug) Klug, 1834, *Jahrb. d. Insectenk.* **1** : 253.
Athalia tibialis* Cameron, 1876, *Trans. ent. Soc. Lond.* **1876 : 460. **Syn. nov.**
Athalia spinarum* var. *orientalis* Cameron, 1877, *Trans. ent. Soc. Lond.* **1877 : 90. **Syn. nov.**
Athalia proxima* var. *funebris* Forsius, 1925, *Notul. ent. Helsingf.* **5 : 91.
Athalia colibri var. *kuroiwae,* Matsumara & Uchida, 1926, *Ins. Mats.* **1** : 70. **Syn nov.**
Athalia lugens* var. *camtschatica* Forsius, 1928, *Notul. ent. Helsingf.* **8 : 46. **Syn. nov.**
Athalia lugens proxima (Klug) Benson 1932, *Ann. Mag. nat. Hist.* (10) **9** : 183.
Athalia lugens* var. *tristis* Forsius, 1934, *Rev. suisse Zool.* **41 : 106. **Syn. nov.**
Larva : Maxwell-Lefroy, H. & Ghosh, C. C., 1908, *Mem. Dep. Agric. India, Ent.* **1** : 6.
Sonan & Shibath, 1928, *Trans. nat. Hist. Soc. Formosa,* **18** : 44–64.

Athalia kansuensis (Benson) **stat. nov.**

Athalia lugens kansuensis* Benson, 1932, *Ann. Mag. nat. Hist.* (10) **9 : 186.

Athalia scapulata Konow

Athalia scapulata* Konow, 1903, *Annu. Mus. zool. Acad., St. Pétersb.* **8 : 117.

Athalia birmanica **sp. nov.**

♀ *Colour.* Head and thorax entirely black, legs black except for hind coxa, trochanters and femur (apart from extreme apex) ; abdomen yellow except for the black 1st tergite and sawsheath. Wings densely infuscate ; stigma and venation black. Length 6 mm.

Structure. Antenna 11–12 segmented (the two apical segments ± fused), with no flagellar segment broader than long. Malar space about two-fifths as long as distance between antennal sockets (1·0 : 2·4). Legs with inner hind tibial spur about as long as apical width of tibia. Hypopygium slightly emarginate each side of middle as in *lugens* (Text-fig. 27). Saw with very shallow teeth as in *rosae* (Text-fig. 45).

Pubescence infuscate above on head, on mesonotum and mesopleura, pale below; mesosternum with a large glabrous patch each side.

♂ as ♀ apart from sexual characters and that the clypeus is ± pale, the antennae may have 2–3 apical segments fused, the malar space is less than the diameter of a single facet of a compound eye, the mesothorax below is unevenly pubescent without glabrous patches and that the size is smaller (5–5·5 mm.).

N.E. BURMA, Kambaiti, 7,000 ft. 1 ♀ (Holotype), 15 ♂, 1.iv to 9.vi.1934 (*R. Malaise*). (Holotype and 9 ♂ paratypes in Stockholm Museum, 6 ♂ paratypes in British Museum.)

(vi) Group of ***furvipennis***

Clypeus asymmetrical (Text-fig. 17) or ± angularly produced medially in front (Text-figs. 15–16). Prelabium often as long as or longer than greatest measure of eye (Text-fig. 22). Tibial spurs long (inner hind spur at least as long as apical width of tibia (Text-figs. 56 and 58). Claws simple. Pronotum often black. On Cruciferae (*Brassica* etc.).

KEY TO SPECIES COMPLEXES

1 Legs mainly yellow with tibiae and tarsomeres ringed only apically with black. Hind inner tibial spur about as long as apex of tibia. Pronotum yellow or black 2

– Legs very variable in colour but ± infuscate and at least with middle femur mainly suffused. Tibial spurs long: hind inner spur longer than apex of tibia. Pronotum black. [♀ hypopygium scarcely emarginate behind] (c) ***nigripes*** complex

2 (1) Pronotum mainly yellow . . . . (a) ***dissona*** complex

– Pronotum mainly black . . . . (b) ***furvipennis*** complex

(a) ***dissona*** complex

1 Prelabium as long as or longer than greatest measure of eye (Text-fig. 22) and/or fore tibia entirely yellow 2

– Prelabium shorter than greatest measure of eye (Text-fig. 21) and front tibia black-tipped apically.
[Underthorax and often scutellum ± yellow. Malar space in ♀ about one-third distance between antennal sockets. ♀ hypopygium slightly emarginate each side behind, cf. Text-fig. 29. Saw as in Text-fig. 45. 5–7 mm. Ethiopia, Nigeria and Congo] . . . . ♂♀ ***schoutedeni*** Forsius

2 (1) Front tibia and underthorax entirely yellow. Prelabium about as long as greatest measure of eye 3

– Front tibia ringed apically with black. Underthorax with black band over the meso-sternopleural line. Prelabium longer than greatest measure of eye.
[♀ hypopygium as in Text-fig. 29. Saw with sharp prominent teeth (cf. Text-fig. 53). 6–7 mm. Congo] . . . . . . ♂♀ ***dulcis*** Benson

3 (2) Middle legs with apices of tibiae and tarsal segments marked with black. Malar space in ♀ about one-third distance between antennal sockets and about the length of three compound eye facets. Antenna with 8th segment onwards broader than long. Fore wings with apices subinfuscate. Underthorax yellow. ♀ hypopygium scarcely emarginate (cf. Text-fig. 29). Saw as in Text-fig. 53. 5–7 mm.
[Sierra Leone, Congo, Nyasaland and Southern Rhodesia]. ♂♀ ***dissona*** Konow

– Front and middle legs entirely yellow. Malar space in ♀ very short, only about as long as a single compound eye facet. (Antenna in unique type missing.) Wings uniformly subhyaline. Underthorax yellow. ♀ hypopygium excised each side of middle (cf. Text-fig. 38). Saw as in Text-fig. 45. 6–7 mm.
[South-east Africa : Mozambique] . . . . . ♀ ***limpopo*** sp. nov.

(b) ***furvipennis*** complex

1 Prelabium longer than greatest measure of eye (Text-fig. 22). ♀ hypopygium scarcely emarginate behind 2

– Prelabium shorter or only as long as greatest measure of eye (Text-fig. 21) . 5

2 (1) Clypeus not more than one and a half times as long medially as distance between antennal sockets. Front tibia often black-ringed apically. Mesosternum often entirely black. Saw often with sharp prominent teeth (cf. Text-fig. 53) . 3

– Clypeus at least about two times as long medially as distance between antennal sockets. Front tibia at most brownish at apex behind. Mesosternum ± yellow. Saw as in Text-fig. 49. 6–7 mm.
[Malar space of ♀ less than half distance between antennal sockets. Kenya and Uganda] . . . . ♂♀ ***pullicoma*** Konow

3 (2) Malar space in ♀ at least about two-thirds distance between antennal sockets (Text-figs. 15 and 16). Saw with prominent sharp teeth (Text-fig. 53). Underthorax ± pale below except sometimes in Congo basin 4

– Malar space in ♀ about half distance between antennal sockets. Saw with blunt shallow teeth (cf. Text-fig. 45). ♀ hypopygium scarcely emarginate (cf. Text-fig. 35). Underthorax entirely black. 5–7 mm.
[Wings subhyaline or (in the mountains of Abyssinia, East Africa and the Cape region) ± infuscate. 1st abdominal tergite often ± infuscate. ♀ hypopygium (cf. Text-fig. 35). Ethiopia to the Cape] . . ♂♀ ***clavata*** Konow

4 (3) Wings subhyaline. Face with labrum, clypeus and cheeks yellow. Underthorax with mesosternum and mesopleura below ± yellow. Mesonotum with glabrous area on the middle of each lateral lobe. 5·5–7 mm.
[? Larvae on *Salvia* and *Coleus barbutus* Bentham (Labiatae). Natal, Zululand, Transvaal and Cape Colony] . . . . ♂♀ ***mellis*** sp. nov.

– Wings strongly infuscate. Face and underthorax entirely black. Mesonotum pubescent all over. 6–8 mm.
[Congo, Uganda and Kenya] . . . . ♀ ***pluto*** Benson

5 (1) Malar space in ♀ at least one-third distance between antennal sockets ; and in ♂ often longer than one compound eye facet. (Unfortunately ♂♂ have not yet been associated with the ♀♀ of *cerberus*, *furvipennis* and *umbrosa* severally.) Mesosternum often entirely black. Wings ± subhyaline or infuscate, but base and apex not strongly contrasted 6

– Malar space in ♀ only about one-quarter distance between antennal sockets ; and in ♂ scarcely as long as a single compound eye facet. Mesosternum and ± mesopleura yellow. Wings subhyaline at base but strongly infuscate at apex. 5–8 mm.
[Saw as in Text-fig. 45. ♀ hypopygium slightly emarginate each side behind (cf. Text-fig. 35). Congo, Uganda, Kenya, Tanganyika, Nyasaland, Southern Rhodesia and Zululand] . . . . . ♂♀ ***ustipennis*** Mocsáry

6 (5) Malar space in ♀ more than half distance between antennal sockets. Saw with shallow blunt teeth (cf. Text-fig. 45) 7

– Malar space in ♀ less than half distance between antennal sockets. Saw with prominent sharp teeth (Text-fig. 55).
[Wings strongly infuscate. ♀ hypopygium slightly emarginate each side behind (cf. Text-fig. 35). 7 mm. Ethiopia and Congo] . ♀ ***cerberus*** Benson

7 (6) Malar space in ♀ little more than half distance between antennal sockets (1·0 : 1·7). Wings infuscate or subhyaline. ♀ hypopygium emarginate behind as in Text-fig. 29. 5–7 mm.
[Larvae on various Cruciferae : pest on *Brassica rapa* L. (= *campestris* L.). Ethiopia, Kenya, Uganda, Congo, Nyasaland, Zululand, Natal, Basutoland and Cape Province.] . . . . ♀ ***furvipennis*** Konow

– Malar space of more than two-thirds distance between antennal sockets (1·0 : 1·2–1·3). Wings heavily infuscate. ♀ hypopygium scarcely emarginate behind (cf. Text-fig. 35). 6 mm.
[Uganda and Congo (Mt. Ruwenzori)] . . . . ♀ ***umbrosa*** sp. nov.

(c) ***nigripes*** complex

1 Inner hind tibial spur less than half as long as metatarsus (Text-fig. 56) . . 2

– Inner hind tibial spur more than half as long as metatarsus (Text-fig. 58).
[Prelabium about as long as greatest measure of eye. Malar space in ♀ about four-fifths as long as distance between antennal sockets. ♀ hypopygium as in Text-fig. 24. Saw as in Text-fig. 51. 6–7 mm. Uganda and Congo]
♂♀ ***armata*** Benson

2 (1) Prelabium longer than greatest measure of eye (Text-fig. 22). 1st tergite mainly black 3

– Prelabium shorter than greatest measure of eye (Text-fig. 21). 1st tergite often mainly pale but ± suffused medially to mainly black.
[Saw as in Text-fig. 51. 5–7 mm. Uganda and Congo (Mt. Ruwenzori)]
♂♀ ***nigripes*** Enslin

3 (2) Malar space in ♀ about two-thirds distance between antennal sockets. Saw with prominent and sharp teeth (cf. Text-fig. 53). 5–6 mm.
[Congo] . . . . ♀ ***asbolos*** Benson

– Malar space in ♀ less than half distance between antennal sockets. Saw as in Text-fig. 45. 6–7 mm.
[Congo] . . . . ♀ ***pulla*** Benson

Athalia schoutedeni Forsius

Athalia schoutedeni* Forsius, 1928, *Rev. Zool. Bot. afr.* **16 : 240.

Athalia dulcis Benson

Athalia dulcis* Benson, 1961, *Expl. Parc national de l'Upemba, Mission G. F. de Witte,* **60 (2) : 8.

Athalia dissona Konow

Athalia dissona* Konow, 1908, *Z. syst. Hym. Dipt.* **8 : 167.

***Athalia limpopo* sp. nov.**

♀ *Colour.* Head black except for face below antennae, mouthparts and undersides of antennae which are yellowish white. Mesonotum black except for posterior half of scutellum and postscutellum ; pronotum, tegula, metanotum, underthorax and abdomen (except sawsheath) yellow. Legs yellow except for apex of hind tibia (and ? apices of hind tarsal segments which are missing in the unique type). Wings hyaline ; stigma, apical three-quarters of costa and subcosta (except extreme base) black ; rest of venation yellow. Length 6·5 mm.

Structure. Antenna (both flagella missing from type). Prelabium longer than greatest length of eye as 1·1 : 1·0. Clypeus slightly angled in front and produced forward more on right than left side. Malar space about as long as diameter of single compound-eye facet or about one-sixth of distance between antennal sockets (0·17 : 1·0). Inner hind tibial spur about as long as apical width of tibia. Hypopygium with hind margin tridentate (cf. Text-fig. 38). Saw with very shallow teeth as in *A. rosae* (Text-fig. 45).

Pubescence pale, short and evenly distributed over head and thorax.

S.E. AFRICA : MOZAMBIQUE, Delagoa Bay, 1 ♀ (Holotype, B.M., Hym. 1.774) (purchased from Mr. Janson, B.M. 1883–29).

Athalia pullicoma Konow

Athalia pullicoma* Konow, 1908, *Z. syst. Hym. Dipt.* **8 : 166.

Athalia clavata Konow

Athalia clavata* Konow, 1907, *Schwed. Zool. Exp. Kilimandj.* **8 : 5.

Athalia mellis sp. nov.

♀ *Colour.* Head black except for face below antennae, mouthparts and ± the undersides of the antennae which are yellow. Thorax black except for the tegula, ± hind margins of the pronotum and ± the mesosternum and lower part of mesopleuron. Legs yellow with apices of all tibiae and tarsal segments black. Abdomen yellow except ± middle of 1st tergite and sawsheath which are black. Wings subhyaline, slightly infuscate apically and flavescent basally ; stigma and (except at their extreme bases) costa and subcosta black ; rest of venation yellow, becoming piceous in apical halves of wings. Length 5·5–7 mm.

Structure. Antenna 10-segmented, only 8th and 9th broader than long (10th consists of 2 ± fused segments). Prelabium longer than eye (as 1·2 : 1·0). Clypeus rounded in front (Text-fig. 15). Malar space about two-thirds as long as distance between antennal sockets (0·7 : 1·0). Hind inner tibial spur about as long as apical width of tibia. Hypopygium slightly emarginate each side of middle (cf. Text-fig. 35). Saw with very sharp prominent teeth (Text-fig. 53).

Pubescence. Pale and evenly distributed on head and underthorax but sparse in the middle of each lateral mesonotal lobe and on the scutellum.

♂ as ♀ except for sexual characters and that the 1st antennal segment and face are yellowish-white, the 8th antennal segment is ± as long as broad, the malar space (Text-fig. 16) is only about as long as two and a half times diameter of a compound-eye facet, or less than a third distance between the antennal sockets (0·3 : 1·0).

SOUTH AFRICA : TRANSVAAL : Sabie. 1 ♂, i.1952 (leg. *Inmph*) (München Mus.).

ZULULAND : Eshowe, 2 ♂, 23–30.iv.1926 (*R. E. Turner*) (B.M.) ; Mtunzini, 1 ♂, 2 ♀, 15.ix.1949 (*A. L. Capener*) (B.M.) ; Nqutu, 1 ♀, 19.v.1955 (*A. H. Newton*) (B.M.).

NATAL : Biggarsberg, 11 ♂, 1 ♂ and 1 ♀ *in copula*, and 10 ♀ (including Holotype B.M. Hym. 1.775) ; Van Reenen, Drakensberg, 1 ♂, 1 ♀, 6,500–7,500 ft., x.1926, 1 ♂, xi.1926, 1 ♂, xii.1926 (*R. E. Turner*) (B.M.) ; Pietermaritzburg, 1 ♂, 27.iii. 1955 (B.M.) ; 1 ♀, ix.1959 (Natal Mus.) (*B. Stuckenburg*) ; near Kraskop, indigenous forest, 1 ♂, 11.ix.1954 (*B. Stuckenburg*) (Natal Mus.) ; Edensdale, 2 ♂, 1–i–1953 (*E. McC. Callan*) (1 ♂, B.M. ; 1 ♂ in Grahamstown Mus.) ; Kloof, 1,500 ft., 1 ♀, ix.1926 (*R. E. Turner*) (B.M.).

BASUTOLAND, Hensley's Dam, Leribe, 1 ♀, 19.ii.1948 (*C. Jacot-Guillarmod*) (B.M.).

ORANGE FREE STATE, Harrismith, 1 ♂, ii.1927 (*R. E. Turner*) (B.M.) : Witzieshoek, 6,100 ft., 1 ♀, 23.ii.1929 (*Hugh Scott*) (B.M.).

CAPE PROVINCE, Umtata, Transkei, 1 ♂, 2 ♀, 18.ii–18.iii.1923 (*R. E. Turner*) (B.M.) ; Grahamstown, 1 ♂, i.1954 (*F. Zumpf*) (München Mus.), 1 ♂, 6.ii.1952, 1 ♂, ix.1954 (*E. McC. Callan*) (Grahamstown Mus.) ; Katburg, 4,000 ft., 1 ♀, x.1932 (*R. E. Turner*) (B.M.) ; Pondoland, Port St. John, 1 ♀, 10–31.vii.1923 (*R. E. Turner*) (B.M.) ; Durban, 1 ♀, 1902 (*F. Muir*) (B.M.) ; Port Elizabeth, Lovemore Park, on *Coleus barbutus* Bentham, 3 ♂, viii.1955 (*J. S. Taylor*) (B.M.) ; Port Elizabeth on *Salvia*, 1 ♂, 9.viii.1956 (*J. S. Taylor*) (Grahamstown Mus.).

The specimens in the British Museum collected by F. Muir and R. E. Turner and examined by Forsius (1931) were labelled and recorded by him as *Athalia incomta* Konow.

Athalia cerberus Benson

Athalia cerberus* Benson, 1961, *Expl. Parc national Albert—Mission G. F. de Witte* (1933–35), **97 : 16.

Athalia pluto Benson

Athalia pluto* Benson, 1961, *Expl. Parc national Albert—Mission G. F. de Witte* (1933–35), **97 : 10–11.

Athalia ustipennis Mocsáry

Athalia ustipennis* Mocsáry, 1909, *Ann. hist.-nat. Mus. hung.* **7 : 12.
Athalia mashonensis* Enslin, 1911, *Dtsch. ent. Z.* **1911 : 668. **Syn. nov.**

Athalia furvipennis Konow

Athalia furvipennis* Konow, 1907, *Schwed. zool. Exp. Kilimandjaro*, **8 : 5.
Athalia flacca* Konow, 1907, *l.c.* **Syn. nov.

***Athalia umbrosa* sp. nov.**

♂ *Colour.* Head and thorax black, obscurely brownish on face below antennae and on underside of antenna. Legs yellow with coxae ± obscurely and apices of tibiae and tarsal segments of all legs broadly ringed with black. Abdomen yellow except ± for middle of 1st tergite and sawsheath which are black. Wings strongly infuscate ; stigma and venation black. Length : 6 mm.

Structure. Antenna 11-segmented ; only 10th broader than long. Prelabium longer than eye (1·1 : 1·0). Malar space four-fifths as long as distance between antennal sockets (0·8 : 1·0). Clypeus angularly produced in front slightly left of the middle. Inner hind tibial spur about as long as apical width of tibia. Hypopygium scarcely emarginate each side of middle as in *A. abyssinica* (Text-fig. 24). Saw with shallow blunt teeth as in *A. rosae* (Text-fig. 45).

Pubescence brown above, pale below, densely and evenly covering head capsule and thorax.

AFRICA, UGANDA : Ruwenzori Range, 1 ♀, (Holotype Brit. Mus., Hym. 1.776) xii.1934–1.1935 (*F. W. Edwards*) (Brit. Mus. E. African Expedition) ; Mt. Elgon, Butandiga, 7,000 ft., 1♀, 1935 (*J. Ford*) (B.M.).

CONGO : Ruanda, Blumba, 2,300 m., 1 ♀, 6.xi.1953 (P. Basilewsky) (Tervuren Mus.) ; Kivu, Burunga, 1 ♀, 5.xii.1925 (*H. Schouteden*) (Tervuren Mus.).

Athalia nigripes Enslin

Athalia nigripes* Enslin, 1912, *Ergebn. Zentr. Afrik. Exp.* **5 : 51.

Athalia asbolos Benson

Athalia asbolos* Benson, 1961, *Expl. Parc national Albert—Mission G. F. de Witte* (1933–35), **97 : 18.

Athalia pulla Benson

Athalia pulla* Benson, 1961, *Expl. Parc national Albert—Mission G. F. de Witte* (1933–35), **97 : 19.

Athalia armata Benson

Athalia armata* Benson, 1961, *Expl. Parc national Albert—Mission G. F. de Witte* (1933–35), **97 : 19–20.

(vii) Group of ***himantopus***

Clypeus subtruncate in front and medially shorter than distance between antennal sockets (Text-fig. 18). Prelabium shorter than greatest measure of eye (Text-fig. 21). Tibial spurs long (inner hind spur at least as long as apical width of tibia). Claws simple. ♀ hypopygium scarcely emarginate (cf. Text-fig. 25). Saw as in Text-fig. 45. 6·5–8·5 mm. One species : *A. himantopus* Klug, in 3 geographical races with very few intermediates.

1 Wings uniformly ± flavescent-hyaline 2

– Wings with the apical halves ± infuscate and the basal ± flavescent-hyaline. [♀ with conspicuous glabrous patch each side of mesosternum. Larvae on *Nasturtium* sp. (*A. J. M. Carnegie*). Egypt, Sudan, lowland Ethiopia, Kenya, Uganda, Congo, Tanganyika, Nyasaland, Natal and Southern Rhodesia] . . . . subsp. ***truncata*** Enslin

2 (1) Mesosternum of ♀ with conspicuous glabrous patch each side of middle.
[Ethiopia] . . . . subsp. ***obsoleta*** subsp. nov.
– Mesosternum of ♀ densely pubescent all over.
[Larvae on *Brassica oleracea* L. Basutoland and Cape Province]
subsp. ***himantopus*** Klug

Athalia himantopus himantopus Klug

Athalia himantopus Klug, 1834, *Jahrb. Ins.* **1** : 293.

Athalia himantopus obsoleta **subsp. nov.**

As defined above. Ethiopia, Addis Abada, 7,500 ft. 8 ♂, 8 ♀ (including holotype, B.M. Hym., 1.771). 30.ix–13.x.1945 (*K. M. Guichard*).

A. himantopus truncata (Enslin) **stat. nov.**

Athalia truncata* Enslin, 1914, *Rev. Zool. Bot. afr.* **3 : 300.

(viii) Group of ***vollenhoveni***

Clypeus excised medially (Text-figs. 19, 20). Prelabium shorter than greatest measure of eye (Text-fig. 21). Antenna with only 8th and following segments broader than long. Tibial spurs long (inner hind spur longer than apical width of tibia). Claws simple. On Cruciferae.

1 1st tergite mainly pale with at most a black medial fleck and fore wings either bicoloured [fuscous apex and hyaline base] or subhyaline 2
– 1st tergite entirely black or fore wings uniformly infuscate 3
2 (1) Fore wing subhyaline throughout. ♀ hypopygium broadly emarginate each side of middle (cf. Text-fig. 32). ♀ mesosternum uniformly pubescent. Saw (as in Text-fig. 45). 7–9 mm.
[Larva on *Raphanus raphanistrum* L. (*J. S. Taylor*). Natal, Southern Rhodesia, Basutoland and Cape Province] . . . ♂♀ ***guillarmodi*** Benson
– Fore wings with sharply contrasted fuscous apex and hyaline base. ♀ hypopygium almost entire (cf. Text-fig. 35). ♀ mesosternum with conspicuous glabrous patch. Saw as in Text-fig. 45. 6·5–9 mm.
[Larva on various Cruciferae including *Brassica rapa* L. and *B. oleracea* L., on which it is a major pest (Le Pelley *in lit.*, 1943). Congo, Uganda, Kenya, Tanganyika and Nyasaland] . . . . . . ♂♀ ***sjoestedti*** Konow
3 (1) Malar space in ♀ about three-quarters distance between antennal sockets (Text-fig. 19) and in ♂ about half diameter of front ocellus. ♀ mesosternum with conspicuous glabrous patch 4
– Malar space in ♀ about as long as distance between antennal sockets (Text-fig. 20) and in ♂ about as long as diameter of front ocellus. ♀ mesosternum without glabrous patch. (♀ hypopygium only slightly emarginate behind) . . 5
4 (3) Wings subhyaline throughout. ♀ hypopygium excised on the hind margin each side of middle (Text-fig. 42). Saw as in Text-fig. 45. 6·5–8 mm.
[Larvae on various Cruciferae including *Brassica oleracea* L. on which it is a major pest (Le Pelley *in lit.*, 1943). Ethiopia, Kenya, Uganda and Tanganyika] . . . . ♂♀ ***vollenhoveni*** Gribodo

– Wings fuscous throughout. ♀ hypopygium scarcely emarginate behind (cf. Text-fig. 35). Saw as in Text-fig. 42. Tibiae and tarsi vary from being only tipped apically with black to being ± suffused with brown or black all over.
[W. Ethiopia, Kenya, Uganda and Congo] . . . ♂♀ ***segregis*** Konow

5 (3) Eyes in ♀ further apart in front than their greatest measure and in ♂ about four-fifths (0·8 : 1·0). ♀ hypopygium scarcely emarginate behind (Text-fig. 30). Saw as in Text-fig. 45 6

– Eyes in ♀ with greatest measure slightly longer than their distance apart in front, and in ♂ their distance apart in front is about two-thirds their greatest measure (0·7 : 1). ♀ hypopygium emarginate behind (cf. Text-fig. 32). Saw as in Text-fig. 45.
[Wings fuscous throughout. 7–8 mm. Mountains of Kenya and Southern Rhodesia] . . . . ♂♀ ***fuscata*** sp. nov.

6 (5) Head, mesonotum and underthorax clothed in long silvery pubescence. Wings subflavous to subinfuscate. 7–9·5 mm.
[Adults on *Lepidium sativum* L. which might be a host plant. Southern Arabia (Yemen and Hadramaut) and Ethiopia] ♂♀ ***schweinfurthi schweinfurthi*** Konow

– Pubescence on upper part of head and mesonotum fuscous; on the rest of the head and underthorax short and silvery. Wings infuscate.
[Kenya (Mt. Elgon and Aberdare Range)]
♂♀ ***schweinfurthi atripennis*** subsp. nov.

Athalia guillarmodi Benson

Athalia guillarmodi* Benson, 1956, *South African Animal Life*, **3 : 412–413.

Athalia sjoestedti Konow

Athalia sjoestedti* Konow, 1907, *Schwed. Zool. Exp. Kilimandj.* **8 : 4.
Athalia vollenhoveni* var. *infumata* Mocsáry, 1909, *Ann. hist.-nat. Mus. hung.* **7 : 12. **syn. nov.**
Athalia marginipennis* Enderlein, 1919, *S.-B. Ges. naturf. Fr. Berlin*, **9 : 354.
Larva: Morstatt, 1913, *Pflanzer*, **9** : 214.

Athalia vollenhoveni Gribodo

Athalia vollenhoveni Gribodo, 1879, *Ann. Mus. Stor. nat. Genova*, **14** : 346.
A. vollenhoveni Grib., Benson, 1933, *Ann. Mag. nat. Hist.* (10) **12** : 101, fig a.

Athalia segregis Konow

Athalia segregis* Konow, 1907, *Schwed. Zool. Exp. Kilimandj.* **8 : 4.
A. melanopoda* Enslin, 1912, *Ergebn. zentral.-Afrik. Exp.* **4 : 55. **syn. nov.**

Athalia fuscata **sp. nov.**

♀ *Colour.* Head and thorax black or piceous. Legs yellow with black coxae, trochanters and apices of tibiae and tarsal segments. Abdomen yellow except black apex of sawsheath and ± 1st tergite. Wings uniformly infuscate; stigma, costa and subcosta of fore wing black; rest of venation brownish.

Structure. Antennae 9–10 segmented with all flagellar segments longer than broad. Head with malar space shorter than distance between antennal sockets (1·0 : 1·2). Eyes with their greatest measure slightly longer than their distance apart in front

(1·2 : 1·0). Hypopygium slightly emarginate behind (cf. Text-fig. 32). Saw with shallow teeth (c.f. Text-fig. 45). Length 5–7 mm.

Pubescence dense on head and thorax, fuscous above, pale below ; mesosternum without glabrous patch.

♂ as ♀ except for sexual characters, that the clypeus and mandibles are pale, malar space about as long as 2 compound-eye facets and the distance between the eyes in front about two-thirds their greatest measure (0·7 : 1).

KENYA : Aberdare Range, 1 ♀ (Holotype B.M. Hym. 1.769), 27.x.1934 (*F. W. Edwards*) (Brit. Mus. E. African Exped. 1934–35) ; S. and E. slopes of Mt. Kenya, at edge of forest, 6,000–7,000 ft., 2 ♀, 3–12.ii.1911 (*S. A. Neave*) (B.M.) ; Teita Hills, (S.) 1 ♀, viii.1947 (*van Someren*) (B.M.) ; Nyeri, 2 ♀, x.1948 (*van Someren*) (B.M.).

SOUTHERN RHODESIA : Vumba Mountains 1 ♀, xii.1933 (*G. Arnold*) (B.M.) ; Vumba Mountains, Umtali, 1 ♀, 19.i.1955 (*B. Stuckenberg*) (Natal Mus.) ; Chirinda Forest, 1 ♀, 5.xi.1955 (*G. Arnold*) (B.M.) ; Chirinda Forest, Mt. Selinda, 2 ♂, 25.i.1955 (*B. Stuckenberg*) (B.M. and Natal Mus.).

Athalia schweinfurthi schweinfurthi Konow

Athalia schweinfurthi* Konow, 1891, *Wien ent. Ztg.* **10 : 41.
A. schweinfurthi Konow, Benson, 1933, *Ann. Mag. nat. Hist.* (10) **12** : 100–102, fig. b.

***Athalia schweinfurthi atripennis* subsp. nov.**

Differs from the typical subspecies (cf. Benson, 1933) in that the wings are uniformly infuscate and that the pubescence on the upper part of the head and mesonotum are fuscous instead of long and silvery as it is on the underthorax.

KENYA : Mt. Elgon, 10,500–13,000 ft., on flower heads of *Senecio elgonensis* Th. Fries, 1 ♀ (Holotype, B.M. Hym. 1.770), ii.1935 (*F. W. Edwards*) (B.M. E. Afr. Exped.) ; Mt. Elgon, 14,000 ft., 1 ♀, ii.1935 (*F. W. Edwards*) (B.M.) ; Mt. Elgon, 12,000–13,500, 1 ♂, ii.1935 (*F. W. Edwards*) (B.M.) ; Mt. Elgon, 8,800 ft., 1 ♀, 6.v.1952 (*G. Arnold*) (B.M.) ; Aberdare Range, Nyeri Track, 10,500–11,000 ft., 1 ♀, 13.v.1934 (*F. W. Edwards*) (B.M.). Elgon cratère, Maji Ya Moto, 3,460 m., 1 ♂, xii.1953 (*N. Leleup*) (Tervuren Museum).

17. SPECIES EXCLUDED FROM ATHALIINI

Athalia pelargonii* Skaife, 1954, *African Insect Life*, pp. 312–313. (Holotype in B.M., Hym. 1.757) = *Arge taeniata* (Klug), **syn. nov.

Athalia pleuritica* Forsius, 1927, *Not. ent. Helsingf.* **7 : 98. (Holotype in B.M., Hym. 1.326) = *Neacidiophora pleuritica* (Forsius), **comb. nov.**

18. ABERRATIONAL AND OTHER NAMES HAVING NO SPECIFIC STANDING

Athalia glabricollis ab. *bulgarica* Gregor, 1932, *Act. Soc. ent. Bohem.* (*Čsl.*) **29** : 6. = *glabricollis glabricollis*.

Athalia graellsii Dours, 1873, *Mém. Soc. Linn. Nord de France*, **3** : 20, nom. nud.

Athalia lineolata var. _cordatoides_ Priesner, 1928, _Ent. Mitt._ **17** : 283 = _circularis circularis._

Athalia lineolata var. _libertoides_ Priesner, 1928 _l.c._ = _circularis circularis._

*_Athalia maculata_ var. _obscurata_ Konow = _maculata._

*_Athalia rosae_ var. _immaculata_ Konow, 1884, _Dtsch. Ent. Z._ **28** : 323 = _liberta liberta._

*_Athalia rosae_ var. _obscura_ Konow, 1884, _Dtsch. Ent. Z._ **28** : 323 = _cordata._

*_Athalia rufoscutellata_ var. _mocsaryi_ Konow, 1891, _Dtsch. Ent. Z._ **35** : 214 = _rufoscutellata._

*_Athalia rufoscutellata_ var. _nigroscutellata_ Konow, 1891, _l.c._ = _rufoscutellata._

*_Athalia rufoscutellata_ var. _pleuralis_ Konow, 1898, _Wien ent. Ztg._ **17** : 230 = _rufoscutellata._

*_Athalia ustipennis_ var. _pectoralis_ Mocsáry, 1909, _Ann. hist.-nat. Mus. hung._ **7** : 12 = _furvipennis._

*_Athalia vollenhoveni_ var. _infumata_ Mocsáry, 1909, _Ann. hist.-nat. Mus. hung._ **7** : 12 = _sjoestedti_ Konow.

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